



Essentials

of **Processing Assessment**

Third Edition

- Detailed guidance on how to assess specific psychological processes during an SLD evaluation
- Expert advice on test selection, analyzing scores, interpretation, and interventions
- Conveniently formatted for rapid reference

Milton J. Dehn

Alan S. Kaufman & Nadeen L. Kaufman, *Series Editors*



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Essentials

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Third Edition

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To my loving wife and business partner, Paula Dehn. As an academic tutoring coordinator for nearly 20 years, she used parent consultation, advocacy, and her understanding of psychological processing deficits and learning disabilities to help numerous children improve their achievement, academic performance, and emotional well-being.

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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 assessment instruments in a variety of domains, such as cognition, personality, education, and neuropsychology. For the experienced clinician, books in the series offer a concise yet thorough way to master use 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 used 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 “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.

This volume—the third edition of *Essentials of Processing Assessment*—provides practitioners with a framework for planning, conducting, and interpreting an assessment of psychological processes, especially from a pattern of strengths and weaknesses (PSW) perspective. It also offers an overview of evidence-based interventions for some psychological processes. The approach is systematic and elucidates a challenging type of evaluation that usually requires multibattery assessment. The author sets the stage by (a) reviewing cognitive processing theories; (b) applying a PSW model for specific learning disability (SLD) identification; (c) reviewing the relations between psychological processes and specific types of achievement, and (d) providing detailed information on how to assess the 14 processes in his processing model. Details are also provided

on major cognitive and memory scales, as well as scales specifically designed for processing assessment. Through step-by-step guidelines and worksheets the author walks the reader through analysis and interpretation of test results from a psychological processing and PSW perspective.

The final component of the evaluation process is diagnosis. To that end, this text provides guidance on how to determine significant intraindividual strengths and weaknesses among psychological processes and how to use those patterns to identify students with SLD. It is our belief that the insights and practices gained from the authoritative author of this volume will lead to more accurate diagnoses and more effective treatment for individuals who struggle with learning.

Alan S. Kaufman, PhD, and Nadeen L. Kaufman, EdD, Series Editors
Yale Child Study Center, Yale University School of Medicine

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ABOUT THE COMPANION WEBSITE

This book is accompanied by a companion website:

www.wiley.com/go/dehn/processingassessment3e

This website includes Excel worksheets and online appendices.

INTRODUCTION AND OVERVIEW

The primary purpose of psychological and educational assessment is to better understand the client or student. Individuals are referred for a variety of concerns requiring different types of assessment, but what all evaluations have in common is the need to better understand *why* the individual is experiencing the difficulties that prompted the referral. In educational settings, students are often referred for learning problems that are manifestations of specific learning disabilities and underlying psychological processing deficits. To better understand such students, an assessment of psychological processes, which includes cognitive abilities or processes, is typically conducted. Analysis of the testing results will usually reveal the examinee's processing strengths and weaknesses, with the weaknesses typically related to the learner's low areas of achievement. Discovery of a student's cognitive and achievement strengths and weaknesses profile should lead to a better understanding of why the student is experiencing learning problems. When teachers, parents, and related support staff better understand the learner, they can adapt instruction, provide accommodations, and offer interventions that better meet the learner's needs, regardless of whether special education services for a specific learning disability (SLD) is provided.

This book is written for psychologists, neuropsychologists, school psychologists, educational diagnosticians, special education teachers, special education administrators, and all related professionals who conduct evaluations of youth who are referred for learning problems. The goal is to help these readers improve their assessment practices, leading to better decisions, recommendations, and interventions for students who struggle with academic learning and performance.

Although this book focuses on *psychological processing deficits* in learning disabled students and using a *pattern of strengths and weaknesses (PSW)* to identify *specific learning disabilities*, the methods and principles promoted in this work apply to all psychoeducational assessments and all types of childhood disabilities that affect academic learning and performance. The overall goal of the model advocated in this book is to use testing and assessment data to gain a deeper understanding of the examinee's psychological and academic functioning, especially a better understanding of *why* the examinee is experiencing learning problems.

DON'T FORGET

The model, methods, and principles promoted in this work apply to all psychoeducational assessments and all types of childhood disabilities that affect achievement and scholastic performance.

The author of this volume, and the two previous editions of *Essentials of Processing Assessment*, has been thinking about, developing, practicing, and advocating for this model for more than 3 decades. His interest and involvement began during his school psychology internship when he was directed to identify a *basic psychological*

processing deficit in a student he had evaluated for possible SLD. He was informed that federal and state legislation required this and that he could meet this requirement by checking one of the items listed on an SLD placement form. The processing deficit options listed on the form were *storage, organization, acquisition, retrieval, expression, and manipulation*, referred to as *SOAREM*. This was puzzling to the young intern because none of the assessment batteries he had used for the evaluation contained any such labels. Furthermore, when he reviewed the examples given for each processing deficit option, he discovered that “has a messy desk” met the requirement for the organization category. He found this very troubling: a student could be placed for SLD because he had a messy desk.

Shortly thereafter, the author of this volume began teaching cognitive assessment to school psychology graduate students. In his course, he began working out and teaching how to address the SLD legislative requirement of having a *deficit in one or more basic psychological processes*. The questions involved included:

- How should each of the SOAREM categories be defined?
- How did common processing areas, such as auditory processing, align with SOAREM?
- How should *deficit* be defined?
- What was meant by *basic*?
- Were *cognitive abilities* part of psychological processes?

- Should test scores be required to document a deficit?
- How low should such test scores be?
- Should psychological processes be tested in a comprehensive manner?
- How should test scores be analyzed to determine a possible deficit?
- Could learners with low IQs have processing deficits, or were they excluded?
- What did these processing deficits have to do with learning and SLD?
- When multibattery testing was conducted, how could test scores be compared across batteries?
- Regarding this requirement, how could SLD identification procedures be improved?

The result of trying to answer these questions was the initial development of guidelines and procedures for his graduate students. These included the recommendations that identification of processing deficits should require:

- Testing all commonly recognized psychological processes, at least those that could be tested with the cognitive scales that were available.
- Explaining how each process tested was related to or part of one of the SOAREM categories.
- Allowing only below-average processes to be considered deficits.
- Comparing each processing score with the examinee's IQ to judge whether there was a deficit.
- Including informal assessment data that corroborated the low processing scores.
- Explaining how the processing deficit might be related to the identified SLD.

At the same time, the author began to question his state's SLD criteria, not just the processing component but why the state was using grade equivalents to determine IQ–achievement discrepancies. After he raised these questions in a state publication, his state department of public instruction invited him to join a committee that was writing a new SLD identification guide. He was assigned to defining the SOAREM categories, aligning them with processes tested with contemporary scales, and recommending guidelines for determining the existence of a deficit. Because SOAREM was based on the old information processing model from the 1960s, the processing options it allowed were fairly narrow, with most of them applying to some aspect of memory. Consequently, the author recommended that more psychological processes, such as auditory processing and processing speed, be explicitly added to the list.

Following this experience, the author was influenced by leaders in the field of intellectual assessment, such as Woodcock, McGrew, and Flanagan who were expanding the applications of Cattell-Horn-Carroll (CHC) theory in such publications as the *Intelligence Test Desk Reference* (McGrew & Flanagan, 1998). These new applications led the author to further refine his procedures for analyzing test scores and determining the existence of processing deficits. The final influence was the advent of the school neuropsychology movement, first promoted by Hale and Fiorello (2004) in their work titled *School Neuropsychology: A Practitioner's Handbook*. Later, Miller (2010) would specialize in training *school* neuropsychologists. These developments encouraged this author to begin emphasizing the brain basis of psychological processes and the brain basis of learning disabilities. For this author, the culmination of these experiences, influences, and developments was a proposal to Alan Kaufman, the editor of this *Essentials* series, for a new book on processing assessment. With Kaufman's approval, work on the first *Essentials of Processing Assessment* began in 2004, prior to the release of the latest federal legislation that was to open the door for a PSW approach to SLD identification.

DON'T FORGET

The model and procedures in this book were originally developed for the identification of *psychological processing deficits*. The model and procedures were later adapted to incorporate a *PSW approach to SLD identification*.

in this book works equally well for identifying processing deficits, identifying a PSW in cognitive abilities and achievement, and just plain identifying within-child strengths and weaknesses.

DON'T FORGET

The model promoted in this book is referred to as *Dehn's Processing/PSW Model*.

is how it will be referred to throughout this text. *Dehn's Processing/PSW Model* focuses on 14 psychological processes that are highly related to academic achievement in reading, writing, and mathematics (see Rapid Reference 1.1).

Thus, the first edition of this book was not influenced by the PSW movement because it had not yet occurred. However, the PSW procedures that were to be advanced by several experts were consistent with what this author had already developed for identifying processing deficits. The point is that the methodology recommended

With the release of this edition, it is time to give this author's model and method a name. Because it's both a processing model and a PSW model, an appropriate descriptive name for it is *Dehn's Processing/PSW Model*. This

☰ Rapid Reference 1.1 The 14 Psychological Processes in Dehn's Processing/PSW Model

- Attention
- Auditory processing
- Executive functions
- Fine motor/sensorimotor
- Fluid reasoning
- Verbal long-term recall
- Visual-spatial long-term recall
- Oral language
- Orthographic processing
- Phonological processing
- Processing speed
- Visual-spatial processing
- Verbal working memory
- Visual-spatial working memory

CHANGES TO ESSENTIALS OF PROCESSING ASSESSMENT

The third edition of *Essentials of Processing Assessment* incorporates many of the important developments and supporting research that have occurred since the second edition was written in 2013. Revisions, additions, and updates have been made to all the chapters and recommended procedures. Also, extensive appendices that include worksheets have been placed in the online resources. Specific changes and additions include:

- More elaboration of concepts and recommended procedures
- More examples
- More emphasis on PSW details and procedures
- More emphasis on strengths
- Information on dyslexia
- New memory processes
- More details on neurological structures
- More information on achievement testing
- More information on PSW in achievement
- Orthographic processing
- New and revised test batteries and scales
- Explanation of how to incorporate crystallized intelligence scores

- More information on English language learners
- More research supporting PSW
- The Memory Processes Analyzer
- More information on the Psychological Processing Analyzer (PPA)

THE NEEDS TO ASSESS PSYCHOLOGICAL PROCESSES

Processing Deficits and Specific Learning Disabilities

The first need to assess psychological processes was mentioned earlier in this chapter. Since Public Law 94-142 was introduced in 1975, federal legislation has defined a learning disability as “a disorder in one or more of the basic psychological processes.” This requirement remains in the current federal legislation. However, when changes were made to federal legislation in 2004 and subsequent U.S. Department of Education regulations, some states and local education agencies began to disregard this requirement and focus more on implementing the new *Response-to-Intervention (RTI)* approach to SLD identification. Even in states and schools where it is still included on their placement forms, identification of a processing deficit often gets little more than lip service. That is, the existence of a processing deficit is affirmed without any data, especially standardized test data, to back it up. This is unfortunate, not so much from an SLD criteria perspective, but because valuable information about the struggling student could be gained by taking this aspect of an SLD evaluation seriously. For schools and practitioners who value this kind of information, this book will provide helpful recommendations and step-by-step procedures for meeting this need.

Pattern of Strengths and Weaknesses and Specific Learning Disabilities

The Individuals with Disabilities Education Improvement Act (IDEIA) 2004 and the federal regulations that followed in 2006 allow states to apply one of three SLD identification models: (a) the traditional ability–achievement severe discrepancy approach; (b) RTI; and (c) alternative research-based procedures. The third option allowed under 2006 federal SLD identification regulations is “the use of other alternative research-based procedures.” One of the research-based procedures is known as the *PSW* method, also mentioned earlier in this chapter. The practice involves using test scores and other assessment data to document a PSW in academic achievement, cognitive abilities, or psychological processes. The existence of a PSW is considered evidence for the educational determination of a specific learning disability. Different models and procedures for determining an examinee’s PSW have been promoted (see details in a later section of this chapter). These practices are still evolving and in some locations being implemented for the first time 15 years after PSW was first introduced. The PSW regulations and

practitioners' desire for structured and defensible methods for making these determinations creates the second need for this book and for psychological processing assessment. This work will attempt to provide as much structure and guidance as possible while still allowing for professional judgment.

Better Understanding of the Examinee's Strengths and Weaknesses

Good psychoeducational and neuropsychological assessment should include testing and analysis of the examinee's psychological processes in order to identify the examinee's strengths and weaknesses, whether or not there are any statutory requirements. Fundamentally, evaluators should engage in good assessment practices that include testing and analysis of psychological processes because they are cognizant of the evidence base connecting psychological processes and achievement, as well as the evidence for a brain basis for learning disabilities. The goal with such assessment is a better understanding of *why* the student is experiencing learning challenges. This is the third and perhaps most important need for psychological processing assessment. This book will provide readers with a review of research on processing–achievement relations and how brain-based deficits can impair learning. In addition, this work will provide structure and guidance for analyzing and interpreting results, as well as suggestions for processing interventions that address the processing deficits.

All aspects of daily functioning throughout the life span depend on psychological processes, not just academic learning; processing weaknesses are related to more than learning disorders. For example, individuals with autism spectrum disorders have processing deficits (Saulnier & Ventola, 2012). Whether directly acknowledged or not, assessment of psychological processes is conducted in several settings and for many referral reasons. Although the assessment practices in this book are discussed in relation to specific learning disabilities, they apply to the psychoeducational or neuropsychological assessment of any individual who is referred for an evaluation, regardless of the suspected disorder.

DON'T FORGET

The assessment practices recommended in this book apply to all types of psychoeducational and neuropsychological evaluations, regardless of the suspected disorder.

PSYCHOLOGICAL PROCESSES

Psychological processes are mental operations that perceive, transform, manipulate, store, retrieve, and express information (Gagne, 1993). Psychological processes range from basic perceptual processes, such as recognizing distinct sounds or perceiving visual details, to higher level cognitive processes that contribute to

language and reasoning. It would be very difficult to identify all the specific brain-based psychological processes that contribute to a cognitive operation, to learning, or to performance of a skill. It would be equally difficult to parse out the relative contribution of each process. Multiple processes underlie performance on any given task, and any identified process can be decomposed into more specific components and operations. The complexity of psychological processing makes it difficult to identify discrete processes. Thus, the psychological processing constructs selected for assessment in *Dehn's Processing/PSW Model* are groupings or aggregates of specific processes, rather than discrete, isolated processes. These psychological processes should be thought of as *broad* processes. Definitions of the 14 selected processes are presented in Chapter 2.

The list of psychological processes certainly could be much longer because nearly every major brain function could be described as a psychological process. However, this book is focused on the processes that have the most influence on acquiring and performing academic skills (achievement). Consequently, the selections have been limited to those psychological and cognitive processes that have strong evidence-based relations with the acquisition of specific academic skills. Processes that do not have a significant relationship with at least one achievement area are not included. Nongenerative processes, such as social or emotional processes, are also excluded.

Psychological Processes and Cognitive Processes

The psychological processes that are the focus of this book are primarily *cognitive processes*. A *cognitive process* is another broad construct that applies to all forms of knowing and awareness. The essence of cognitive processing or *cognition* is thinking, reasoning, learning, and remembering, but it also includes basic processes,

DON'T FORGET

Psychological processes are primarily *cognitive processes*. In this book, the *psychological processes* term also refers to and includes *cognitive processes* and *cognitive abilities*.

such as perception. Cognitive processes might be considered a subset of psychological processes. For example, psychological processes include brain functions that generally are not considered as cognitive processes, such as sensory, motor, and social-emotional functioning. Although the processes

that are the focus of this book are primarily cognitive, and some experts use the terms interchangeably (e.g., Naglieri, 2011), in this work they are primarily referred to as *psychological processes*, because it is the more commonly used term in legislation pertaining to SLD identification. That is, whenever the term *psychological processes* is used herein, it also refers to *cognitive processes*.

Psychological Processes and Cognitive Abilities

Cognitive abilities might be thought of as a combination of innate mental capacities and acquired knowledge and skills. For example, quantitative reasoning is a cognitive ability that is composed of some innate functions, such as the capacity to understand relative differences in quantity, to apply logic, and to creatively solve problems, coupled with mathematics concepts and procedures that have been acquired through experience and learning. The level of performance in skills such as arithmetic is partially determined by the developed level of the abilities they depend on. For that reason, abilities are typically viewed as indicators of potential or capacity. The functioning and demonstration of abilities, which tend to be broad, is dependent on underlying cognitive processes, which are relatively more specific and discrete, working in an interrelated fashion. Given this distinction, mental features such as processing speed and auditory processing should not be considered abilities but basic psychological processes. Despite these distinctions, in this book the terms *cognitive processes* and *cognitive abilities* are used interchangeably, and *psychological processes* include *cognitive processes*.

Psychological Processes and Intelligence

The traditional approach to measuring cognitive abilities and learning potential has been to use intelligence tests. Although the construct of intelligence has many definitions, including some that are very similar to cognitive processes, the construct of intelligence has primarily included very broad abilities, such as verbal and nonverbal intelligence. In contrast, processing assessment tends to focus on more narrow abilities (or processes), such as auditory processing. Furthermore, the construct and measurement of intelligence historically have focused more on the *products* or content of cognition rather than on the processes of cognition (Miller, 1999). For example, until recently about 50% of what intelligence tests measured was verbal ability or acquired knowledge, which is usually classified as *crystallized intelligence*. Although the acquisition and retrieval of crystallized intelligence requires processing, it is mainly the content of crystallized intelligence that is being tapped by intellectual tests. The level of crystallized intelligence is undeniably a strong indication of intellectual functioning, academic achievement, and underlying neuropsychological processing, but it is not a process per se. From crystallized intelligence scores, one can only infer what processing levels might be. Processing assessment attempts to measure cognitive processes more directly than intellectual assessment does.

From another perspective, psychological processing is what underlies intelligence. To acquire and demonstrate intellectual abilities, psychological processes

must be intact and at an adequate threshold. Thus, processing and intelligence have an integral relationship, which is perhaps best conceptualized by Sternberg (1997). In Sternberg's theory, there are three basic kinds of processing components: (a) metacomponents (higher order executive processes), (b) performance components (lower order processes that process information under the supervision of the metacomponents), and (c) knowledge-acquisition components (the processes involved in acquiring knowledge). Such processes underlie intellectual performance and are the essence of learning. Intelligence, processing, and learning are all interrelated; for example, the development of general intelligence, especially crystallized intelligence, depends on learning.

DON'T FORGET

Intelligence tests can and should be used as part of a processing assessment because they reliably and validly measure several psychological processes.

Despite these distinctions, *intelligence* tests, such as the Wechsler Intelligence Scale for Children, Fifth Edition (WISC-V; Wechsler, 2014) can and should be administered as part of psychological processing assessment because they contain reliable and valid measures of various

psychological processes (Chapter 8). Another reason for their use is that with each iteration, they have evolved to include more and more processing measures, such as the WISC-V's expansion into long-term recall.

Psychological Processes and Skills

The engagement of psychological processes in a learning environment leads to the acquisition of knowledge and skills and allows the effective performance of acquired skills. Skills involve the acquired ability to perform procedures. Skills develop as a result of instruction, training, study, and practice. Similar to the distinction between crystallized intelligence and processing, skills, such as academic skills, are not psychological or cognitive processes but the product of such processes. Consequently, tests that purport to measure psychological processes should be relatively free of academic content and procedures. For example, using a test of arithmetic skills to measure working memory can result in an invalid working memory score, especially when the examinee lacks arithmetic skills.

A different but related issue is the extent to which psychological processes are really just developed *skills* and not innate abilities. This is similar to the old *nature–nurture* controversy. Certainly, psychological processes develop and improve as a result of experiences and structured learning. Thus, in a sense, it could be argued that they are primarily, or at least in part, skills. Nonetheless, they should still be thought of as *processes*, even though their development and