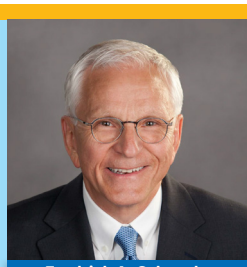
Woodcock Johnson IV

# WJ Perspectives



Fredrick A. Schrank, Ph.D., ABPP

# A New Era of Cognitive Abilities Assessment with the *Woodcock-Johnson* IV

Fredrick A. Schrank, Ph.D., ABPP

***The Woodcock- Johnson*® IV Tests of Cognitive Abilities** is the updated and redesigned edition of one of the most widely-used batteries of individually-administered cognitive tests. Based on the evolution of CHC theory, new tests and interpretive clusters emphasize the most important and diagnostically useful measures for evaluation of intra-individual strengths and weaknesses. The complementary ***WJ* IV™ Tests of Oral Language** yields additional measures of cognitive-linguistic competency that can provide school psychologists with new insights into cognitive-linguistic learning problems.

The ***Woodcock-Johnson* IV Tests of Cognitive Abilities** (***WJ* IV COG**: Schrank, McGrew, & Mather, & Woodcock, 2014) will be available in Summer, 2014. Designed to meet current and future assessment needs, the ***WJ* IV COG** features a carefully constructed organizational plan, new tests and clusters, an updated theoretical model, and customized interpretive analyses.

The ***WJ* IV COG** is carefully engineered to be the most contemporary battery for evaluation of strengths and weaknesses among cognitive abilities and linguistic competencies. Since the Cattell-Horn-Carroll (CHC) theory was first articulated almost 15 years ago, a great deal of research has both confirmed the merits of the theory and at the same time pointed to the need for increased specification, explanation, and amendments to the initial postulates. The ***WJ* IV COG** is designed to maintain the cutting edge of contemporary assessment practice by moving beyond the initial specification of CHC theory with an updated model for interpretation of tests results. In its redesign, emphasis has been placed on the most important cognitive abilities.

**The *WJ* IV COG is a state-of-the-science application of the updated model of CHC theory. New tests and clusters are designed to emphasize important cognitive abilities.**

The complete ***WJ* IV COG** includes 18 tests organized into a standard and extended battery. Several of the new tests were developed to address contemporary assessment needs.

The new Verbal Attention test measures short-term working memory in a format that captures both the attention and verbal aspects of working memory. The test represents an authentic approach to measuring the ability to attend to orally-presented material and then focus attention on a task requirement that requires a review of the contents of working memory in order to provide a correct response to a question.

Another new test, Letter-Pattern Matching, assesses perceptual speed for orthographic patterns or the efficiency with which a student can rapidly recognize and process grapheme patterns. Efficiency in recognizing orthographic patterns may be particularly related to the development of automaticity in foundational functions underlying reading and spelling performance.

The new Phonological Processing test measures the depth and breadth of word access and retrieval via phonology. This test of phono-lexical connectivity and flexibility evaluates the impact of three phonological networking capabilities on lexical development.

Visualization is a new, two-part test of spatial relationships and the ability to mentally manipulate visual representations within the mind's eye. One part requires visual-spatial recognition, and the other requires a more cognitively complex two- or three-dimensional visual manipulation.

A new, diagnostically important Nonword Repetition test measures a combination of auditory processing and phonological memory using repetition of word-like stimuli. Increasingly complex novel non-words form the stimulus material that must be repeated exactly as modeled. This task has been linked to the ability to learn new words and can provide an important marker of a language-related disability.

## Cluster Interpretation Emphasizes Advances in CHC Theory

New and refined clusters in the ***WJ* IV COG** reflect advances in CHC theory plus practical applications for interpretation, accommodation, and intervention. Short-Term Working Memory is now widely recognized as a broad neuroscientific construct that refers to a dynamic, temporary storage system wherein information in immediate awareness is processed and manipulated. Due to its predictive ability for performance in a wide variety of timed academic tasks, Perceptual Speed is elevated in importance in the ***WJ* IV COG**. This cluster is expanded

in breadth to identify levels of performance with both speeded orthographic and numeric processing tasks. The completely reformulated Auditory Processing cluster emphasizes the application of phonological access, processing and storage skills in both simple and cognitively complex tasks that provide useful diagnostic markers of intact abilities and disabilities. The ***WJ* IV COG** is organized into the Standard Battery (Tests 1–10) and the Extended Battery (Tests 11–18). For many assessment purposes, administration of a set of tests from the Standard Battery provides a complete cognitive protocol, including an assessment of general intellectual ability and up to three important CHC factors: Comprehension- Knowledge (Gc), Fluid Reasoning (Gf), and Short-Term Working Memory (Gwm). The efficiency with which an individual can perform cognitive tasks automatically is measured by the Cognitive Efficiency cluster. In addition, a new Gf-Gc Composite is introduced that many professionals will find valuable as a predictor score for evaluation of strengths and weaknesses across all areas of cognitive processing and academic performance. The easy-to-use Intra-Cognitive Variation procedure allows school psychologists to obtain important information on cognitive strengths and weaknesses at both the test and cluster level. For more extensive evaluation questions or measurement of a wide array of clinically-sensitive cognitive processes, tests from the Extended Battery provide additional diagnostic information on Perceptual Speed (P), Auditory Processing (Ga), Long-Term-Retrieval (Glr), Visual Processing (Gv), and Cognitive Processing Speed (Gs). Any of the tests from the extended battery can be included in the Intra-Cognitive Variation analysis, along with the CHC broad and narrow clusters that are created from the administered tests.

## Gf-Gc Composite and Evaluation of Strengths and Weaknesses

An important new cluster is introduced in the ***WJ* IV COG** that is comprised of four tests from the Standard Battery. These four tests combine to form the Gf-Gc Composite—a highly-reliable combined index of crystallized knowledge and fluid intelligence that may be useful for many evaluative purposes, particularly as a comparison score for a comprehensive evaluation of relative strengths and weaknesses among a broad variety of areas of academic achievement, oral language abilities, and cognitive processing.

The new ***WJ* IV** Gf-Gc Composite score facilitates, in one co-normed system, the most complete evaluation of strengths and weaknesses across multiple domains. For the first time in any normed diagnostic system, academic deficits can be associated with cognitive processing weaknesses and evaluated in light of processing strengths. This single analysis can reveal patterns of co-varying abilities that may help provide explanations for limitations in academic performance and may yield important diagnostic information for planning interventions and/or accommodations.

## Evaluation of Cognitive-Linguistic Competency

Completely new to the ***WJ* IV** system, a dedicated test easel contains a set of oral language and language-related measures that comprise an important diagnostic supplement to the ***WJ* IV COG**. These are the ***WJ* IV Tests of Oral Language** (***WJ* IV OL**; Schrank, Mather, McGrew, & Woodcock, 2014). For example, the new Segmentation test offers examiners a highly-predictive three-part test for measuring critical reading-related skills involved in breaking works into parts and phonemes. Two new clusters are introduced for in-depth evaluation of the presence and severity of any phonological and rapid automatic naming disabilities. The new Speed of Lexical Access cluster assesses rapid automatic naming and fluent associative retrieval of words. The Phonetic Coding cluster assesses two important abilities— combining sounds into whole words and breaking whole words into parts. Deficits in one or both of these diagnostic clusters provide important information for accommodations or interventions in reading, writing, and any area of achievement or cognition where language is an important consideration.

**Understanding relative processing strengths and weaknesses and academic deficits in relationship to the Gf-Gc Composite can lead to individualized instruction designed to target identified learning needs.**

## Summary

The ***Woodcock-Johnson* IV COG** and **OL** set a new standard for evaluation of individual strengths and weaknesses among contemporary, theory-based measures of cognitive and cognitive-linguistic abilities. Based on an evolved model of CHC theory, the new tests and interpretive clusters are designed to meet current and future assessment needs. A new battery design makes the ***WJ* IV** easier to use than ever before. The new **Tests of Oral Language** provide an important diagnostic supplement to the Tests of Cognitive Abilities. Together, these co-normed batteries comprise the most comprehensive system for the assessment needs of school psychologists who strive to maintain state-of-the-science practices in individualized assessment and who want to obtain the most meaningful information for diagnosis, intervention, and educational planning.

### References

Schrank, F., Mather, N., McGrew, K. S., & Woodcock, R. W. (2014). Woodcock-Johnson IV Tests of Oral Language. Rolling Meadows, IL: Riverside Publishing.

Schrank, F., McGrew, K., & Mather, N., & Woodcock, R. W. (2014). Woodcock-Johnson IV Tests of Cognitive Abilities. Rolling Meadows, IL: Riverside Publishing.