Establishing a Psychological Processing Deficit for Specific Learning Disability Identification in the State of California: Technical Guidance for School Psychologists

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Introduction

The purpose of this document is to provide technical guidance to practicing school psychologists regarding the documentation of a psychological processing deficit when conducting specific learning disability (SLD) assessments in the state of California. The state of California is one of the few states that require that a deficit in psychological processing be established when using the discrepancy model and/or team decision approach outlined in CCR 3030 (j) (c). California utilizes language similar to IDEA criteria in its generic SLD definition found in EC 56337 (a). According to this statute, SLD is defined as a "disorder in one or more of the *basic psychological processes* involved in understanding or in using language, spoken or written, which may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or perform mathematical calculations." The term *basic psychological processes* are further defined in CCR 3030 (J) (1). According to that statute, "basic psychological processes include attention, visual processing, auditory processing, sensory-motor skills, cognitive abilities including association, conceptualization and expression."

Existing federal and state regulations do not provide any additional information as to what procedures a school psychologist should utilize in determining when one or more of the above areas are a disorder. Modern dictionaries define disorder as the disruption of normal functioning, thus we know at some level that evidence must be present that at least one area of psychological processing is not intact for an individual to qualify as SLD using the discrepancy model. Unfortunately, many practitioners lack a systematic evidence-based approach for conducting SLD assessment. They engage in decision-making practices that violate basic assumptions of psychometric theory and fail to integrate a theoretical framework in their understanding of cognitive processing.

Common Questions

How do I Define When a Deficit Become a Disorder?

This is one of the most common questions that are asked by school psychologists when discussing these issues. Unfortunately, there is no guidance to be found in the education code, code of regulations or IDEA. In order to avoid data mining from one case to the next depending on the spread of scores, it is recommended that you adopt a consistent criterion for defining when a processing score becomes a disorder. I have found that normative base rates provide the most rationale way to do this while still allowing for discretion from one practitioner to the next. This approach simply requires analyzing where a requisite processing standard score falls in the normative sample. I have adopted the 10^{th} percentile as my cut off which translates to any processing score that is 80 (M = 100, SD = 15) or below being considered as evidence of a processing disorder. There is certainly some subjectivity here whereby one can adopt a more stringent or less stringent criterion however; I would encourage you to consider whether or not a score is truly indicative of a disorder if it occurs in more than 1 out of every 10 people. This approach also has solid theoretical grounding from psychometric theory.

However there are several approaches that are commonly utilized to establish a disorder that I would not recommend. The first is the use of ipsatize analysis or the deviation of processing related scores from the mean of a child's cognitive ability profile. The major issue with this approach is that you are performing a transformation of the standard score which results in a score which has no anchor to its original estimates of reliability and validity. When properties of the ipsative scores have been assessed and compared to normative counterparts, the normative scores are far more reliable, valid, and stable (see McDermott, et al. 1992). The other issue is the use of a significant discrepancy between IQ (e.g., 15 points) and the processing score as a criterion for a disorder. The problem with this approach is that it assumes cognitive abilities are orthogonal to each other. From a CHC perspective almost all known cognitive abilities aggregate together to load on a general intellectual factor thus, low scores in turn depress the IQ which makes it less likely for a significant difference to emerge in the very children where we expect that it would. This phenomenon has been referred to as the "Mark Penalty" (Willis & Dumont, 2002). Furthermore, many part-scores on multi-factored ability tests are composed of a substantial amount of common variance that is attributable to the general factor (Canivez, 2013).

Which scores do I use?

Another common question and one for which ultimately there is no answer in the regulations. One would think, given best practices that you should rely on full-scale scores and/or indexes, though subtest analysis is not forbidden at the regulatory level. While some subtests do have adequate psychometric properties for interpretation I would strongly caution such an approach on the basis of specificity. Subtests measure performance at a very discrete level and sample very limited behavior patterns whereas indexes (composed of more than one subtest) and certainly full-scale scores sample domains in a more general manner. It also helps that full-scale scores tend to have more defensible psychometric characteristics via the Spearman-Brown prophecy (Brown, 1910; Spearman 1910) so you can have more confidence that the disorder you have identified is not the result of error variance. Furthermore, the basic psychological processing

domains in the law are general in nature. The problem with subtest analysis is that one can have a deficit in a discrete area of general processing but have adequate skills in aggregate via index scores. Joel Schneider has an excellent video tutorial on why this is so, see below.

http://my.ilstu.edu/~wjschne/AssessingPsyche/CausesOfWithinCompositeDifferences/CausesOfWithinCompositeDifferences.html

The processing area has to be linked to identified areas of achievement deficit right?

Again, makes intuitive sense but ultimately it is not required by the law and I suspect you will find that this rarely happens in practice. According to the law, all one has to be have is a deficit in one or more of the basic psychological processes as outlined in the code of regulations. Now you can choose to not recommend eligibility if there is no relevant link (e.g., basic reading skills and sensory-motor skills) but keep in mind you are imposing a higher standard of eligibility on a child than the law requires and are violating their due process rights. Again, you can justify your actions at hearing and maybe get a hearing officer to agree with you but that is a big risk and one which I personally wouldn't recommend taking very often. In the words of Guy McBride, "just because you are given a noose doesn't mean you have to hang yourself."

Are there definitions for the basic psychological processes outlined in C.C.R. 3030?

Nope. Technically it is completely up to the practitioner and simply must pass muster at a hearing. I would recommend utilizing some kind of consistent theoretical framework (e.g., CHC), for consistency and clarity. For instance, a common base canard is that attentional processing is equivalent to ADHD. Again, that is an arbitrary standard and one that makes no sense given that ADHD is covered through another SPED category (OHI). If you use this standard than you are essentially saying that almost every kiddo that qualifies under OHI (ADHD) is also going to simultaneously be eligible under OHI (since most of them will have a significant discrepancy as well). This is not what the regulators intended. For attention I have typically utilized a norm-referenced tool or rating scale that is significant yet falls short of the standard for traditionally diagnosing ADHD at a clinical level. I have also used the explanation that ADHD is typically pervasive and general in nature whereas attentional processing can be more task specific. Remember, when in doubt always error on the side of being more generous than not, without violating ethical standards for test interpretation of course, most cases go to hearing because eligibility was not provided not the reverse.

I have to use specific processing test (e.g., TAPS, TVPS) right?

Sure, if you want to increase your testing time. There is no requirement in the law that one must administer a comprehensive test of each specific processing area. Furthermore, the common practice of administering a TAPS or TVPS as part of standard battery is confounded by the fact that almost every kiddo is also given a comprehensive battery of cognitive abilities which sample many of the same behaviors. For example, the WJ includes composites of visual and auditory processing that have similar psychometric properties to the full tests. If you simultaneously give both are you interpreting both when you discuss processing or only the TAPS (all too common)? How are you accounting for regression to mean and incremental validity if you do? I commonly

utilize index measures via cross-battery approach to satisfy my processing assessment requirements. It saves time and in most cases provides me with a measure that has better psychometric properties than many of the "processing" tests out there. Remember we are looking for general indicators, if a kiddo doesn't score low on a general composite than it is highly unlikely that they have a disorder in that area. And if they score low than what else do you need? The law does not require that you administer multiple measures to validate deficits; it requires that eligibility not be based on a single measure. If you give more than one test (and test is an all-encompassing term for any form of assessment) than you have satisfied this procedural requirement.

Additionally, practitioners must meet general IDEA regulations for assessment such as using tools validated for the purpose intended, that are not biased in any way, given by an individual training appropriately for such purposes.

Do I have to assess in all seven processing area every time?

The only guidance we have is the general requirement that a student must be assessed in all areas of suspected disability. Since CCR outlines those seven areas under basic psychological processes than they must all be considered at some level when conducting an assessment of an individual suspected of SLD. You can utilize screening procedures to rule out formal assessment in some areas however I would caution you to consider the validity and reliability of your screening measures and being prepared to defend your procedures for screening things out. Plus, this is prime territory for parents to request an IEE. For example, the VMI is commonly utilized to assess sensory-motor skills despite the fact that the VMI is for all intents and purposes worthless as a diagnostic tool and has limited relationships with achievement. This is a classic example of where practice trumps logic.

Plus, the stability of strengths and weaknesses, especially if using part scores, has been shown to fluctuate significantly from one evaluation cycle to the next (see Canivez & Watkins, 1999) so there is a good bet that the deficit you identify at an initial may fall within the average to low average range when assessing the same child three years later.

Basic Psychological Processes Operationalized

I recommend utilizing the Cattell-Horn-Carroll theory of cognitive abilities (CHC; Schneider & McGrew, 2012) as a theoretical framework for defining abilities as test measures. It provides a defensible platform for defining the cognitive abilities and most of the other areas outlined in CCR 3030. The definitions below are my own and correspond to the latest edition of CHC theory, see Figure 1. The areas of exception are attentional processing and sensory-motor skills. There are working definitions for these areas but it doesn't take much to come up with something that we can all agree on.

Areas in which there is direct correspondence between CHC and CCR:

Auditory Processing (Ga): The ability to analyze, synthesize, and discriminate auditory stimuli, including the ability to process and discriminate speech sounds that may be presented under distorted conditions. Narrow abilities include phonetic coding and sound discrimination.

Visual Processing (Gv): The ability to perceive, analyze, synthesize, and think with visual patterns, including the ability to store and recall visual representations. Narrow abilities include visualization, visual closure, and visual memory.

Areas in which there is logical correspondence between CHC and CCR:

Cognitive Conceptualization
Defined as the ability to see basic similarities and differences, classify, categorize, summarize and draw conclusions, in order to implement an appropriate procedure or to further understanding. These characteristics are broad features of the cognitive domain of fluid reasoning (Gf) Areas impacted may include problems with understanding and reasoning, generalizing, and problem solving.

Fluid Reasoning (Gf): The ability to utilize both deductive and inductive thinking in order to solve novel problems. Fluid reasoning requires problem solving which cannot be completed by relying on previously learned schemas. Narrow abilities include induction, sequential reasoning, and quantitative reasoning.

Cognitive Association
Defined as the ability to see and link similarities between stimuli. Areas impacted may be difficulty storing and retrieving information through association (long term memory; Glr), registering and immediate use of information (short-term memory; Gsm) and/or processing and learning novel stimuli at an expected rate of performance, otherwise known as processing or psychomotor speed (Gs).

Short-Term Memory (Gsm): The ability to encode, process, and manipulate information that is immediately available. Narrow abilities include memory span and working memory capacity.

Long-Term Storage and Retrieval (Glr): Defined as the ability to store, consolidate, and retrieve information over a period of time that extends beyond immediate awareness. Narrow abilities include learning efficiency, associative memory, and retrieval fluency.

Processing Speed (Gs): The ability to perform elementary cognitive tasks efficiently. Narrow abilities include perceptual speed, psychomotor speed, and number facility.

Cognitive Expression

Defined as the ability to communicate ideas through language such as writing, gesturing and speaking and is associated with crystallized ability (Gc). Areas impacted my include problems with verbal knowledge and comprehension.

Crystallized Ability (Gc): The depth and breadth of cultural knowledge that is largely the result of exposure to school-based learning tasks. Narrow abilities include verbal information, language development, and lexical knowledge.

Areas in which there is no correspondence between CHC and CCR and require working definitions:

Sensory-Motor Skills: Sensory-motor integration refers to the ability to relate visual stimuli to motor responses in an accurate and appropriate manner (Fletcher-Janzen, 2000). As such, the concept of visual-motor integration embraces a broad spectrum of visual and motor behaviors existing at all levels of cognitive functioning. An example of this type of processing is the act of copying a shape by which the physical fine motor movements of drawing must correspond with the incoming visual stimuli of the shape.

Attentional Processing: Attention can be described as a manifestation of a complex system of mental controls. These controls influence a person's ability to process information, as well as regulate thinking and completion of daily activities. In order to regulate thinking and daily activities (including school and homework) it is necessary to be able to attend to both auditory and visual stimuli in either structured or unstructured environments. All other cognitive abilities rely on attention/concentration making a foundation for learning. Illness and other emotional distress can negatively affect attention, which in turn may influence overall cognitive abilities. There is no exclusive measurement that exists to measure attention, although, there are many objective measures including neuropsychological and observational tools, which can be used to measure a person's attending skills.

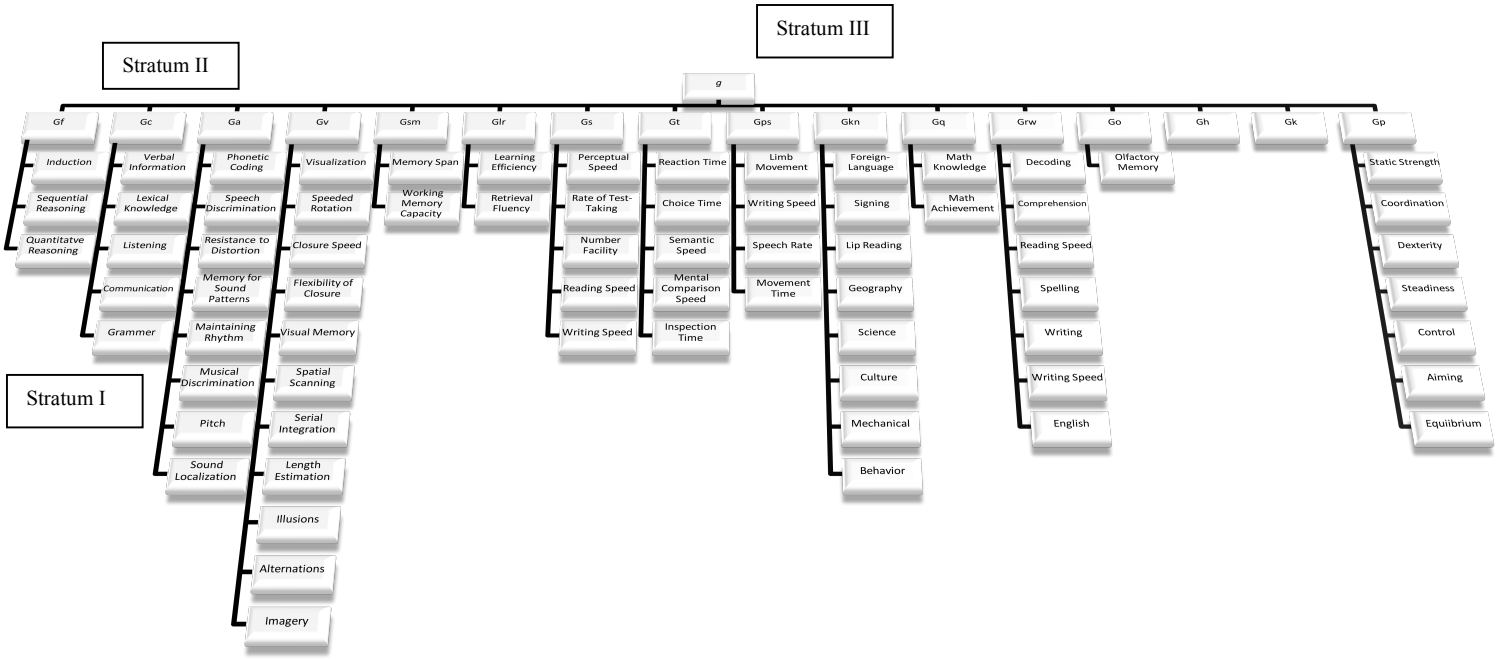

Figure 1. The most recently updated version of the Cattell-Horn-Carroll (CHC) Model of Human Cognitive Abilities (Schneider & McGrew 2012). g = general intelligence, Gf = fluid intelligence/reasoning, Gq = quantitative reasoning, Gc = crystallized intelligence/ability, Grw = general reading and writing ability, Gsm = short-term memory, Gv = visual processing, Ga = auditory processing, Glr = long-term memory and retrieval, Gs = processing speed, Gt = decision speed, Gps = psychomotor speed, Gkn = domain specific knowledge, Go = olfactory abilities, Gh = tactile abilities, Gk = kinesthetic abilities, Gp = psychomotor abilities.

Measures of Sensory-Motor Skill

Sensory Processing Measure (OT)
Bruininks-Oseretsky Test of Motor Proficiency-Second Edition (OT)
Peabody Developmental Motor Scales-Second Edition (OT)
Test of Gross-Motor Development-Second Edition (OT)
Bender-Gestalt-Second Edition
KOPPITZ System for the BG-Second Edition
Developmental Test of Visual-Motor Integration-Sixth Edition (VMI and Motor tests)
Full-Range Test of Visual-Motor Integration
Wide-Range Assessment of Visual-Motor Abilities
Developmental Test of Visual Perception-Second Edition (VMI Index)
Children's Psychological Processing Scale (Fine-Motor Index)
NEPSY-2 Sensorimotor Tests
Dean-Woodcock Sensory-Motor Battery
Test of Visual-Motor Skills-Third Edition

Measures of Visual Processing

Test of Visual Perceptual Skills-Third Edition
Motor-Free Visual Perception Test-Third Edition
Developmental Test of Visual-Motor Integration-Sixth Edition (Visual test)
KABC-II Visual Processing
WJ-III COG Visual-Spatial Thinking
WJ-III COG Diagnostic Supplement Visualization
DAS-II Visual-Spatial Composite
Children's Psychological Processing Scale (Visual Processing index)
NEPSY-2 Visuospatial Processing Tests
WISC-V Visual-Spatial Index
Stanford-Binet Fifth Edition Visual-Spatial

Measures of Auditory Processing

Test of Auditory Processing Skills-Third Edition
Comprehensive Test of Phonological Processing-Second Edition
WJ-III COG Auditory Processing
WJ-III COG Phonemic Awareness
WJ-III COG Diagnostic Supplement Speech Discrimination
SCAN-3 Test for Auditory Processing Disorders in Children (Audiologist)
Auditory Processing Abilities Test
Developmental Test of Auditory Perception
Children's Psychological Processing Scale (Auditory Processing)

Measures of Cognitive Conceptualization

Raven's Progressive Matrices
Naglieri Nonverbal Ability Test
Cognitive Assessment System-Second Edition (Simultaneous Index)
Cognitive Assessment System Rating Scale (Simultaneous Index)
KABC-2 Fluid Reasoning

WISC-V Fluid Reasoning
WJ-III COG Fluid Reasoning
DAS-II Nonverbal Ability Composite
Wide Range Intelligence Test-Fluid Composite
RIAS-Nonverbal Intelligence Index
Wechsler Abbreviated Scale of Intelligence-Second Edition (PRI)
Stanford-Binet-Fifth Edition (Fluid Reasoning)
Kaufman Brief Test of Intelligence (Fluid)
Comprehensive Test of Nonverbal Intelligence-Second Edition
Children's Psychological Processing Scale (Fluid Reasoning)

Measures of Cognitive Expression

Clinical Evaluation of Language Fundamentals-Fourth Edition (SLP)
WISC-V VCI
DAS-II Verbal Ability Composite
Wechsler Abbreviated Scale of Intelligence-Second Edition (VCI)
KABC-II Knowledge
WJ-III COG Comprehension-Knowledge and/or Verbal Ability
Stanford-Binet-Fifth Edition Knowledge
Kaufman Brief Test of Intelligence (Crystallized)
Wide-Range Intelligence Test-Crystallized Index
RIAS Verbal Intelligence Index
Children's Psychological Processing Scale (Oral Language)
NEPSY-2 Language Tests

Measures of Cognitive Association

NEPSY-2 Memory and Learning Tests
Test of Information Processing Skills
Trail Making Tests
Cognitive Assessment System-Second Edition (Planning and Successive)
Cognitive Assessment System Rating Scale (Planning and Successive)
Delis-Kaplan Test of Executive Function Skills
Wide-Range Test of Memory and Learning-Second Edition
Test of Memory and Learning-Second Edition
Standford-Binet-Fifth Edition Working Memory
WISC-V PSI and WMI
Rey Complex Figure Tests
Children's Auditory Verbal Learning Test-Second Edition
California Verbal Learning Test
RIAS General Memory Index
KABC-II Short-Term memory and Long-Term Retrieval
DAS-II Processing Speed and Working Memory Composites
WJ-III COG Processing Speed, Long-Term Retrieval, and Short-Term Memory Clusters
Children's Psychological Processing Scale (Processing Speed, Long-Term Retrieval, Working Memory, and Short-Term Memory)

Measures of Attentional Processing

NEPSY-2 Attention and Executive Functioning Tests
Connors Behavior Rating Scales-Third Edition
Continuous Performance Tasks
Test of Everyday Attention
Cognitive Assessment System-Second Edition (Attention)
Cognitive Assessment System Rating Scale (Attention)
BASC-2 Attention Problems
SNAP-IV
BASC-2 Hyperactivity
BASC-2 Executive Functioning
Behaviors Rating Scale of Executive Functioning
WJ-III COG Broad Attention
WRAML-2 Attention/Concentration
Children's Memory Scale Attention/Concentration
Children's Psychological Processing Scale (Attention, Executive Functioning)

Additional Resources

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