

Finger-Tip Facts for School Psychologists

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Definitions, explanations, links

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Introduction

Finger-Tip Facts for School Psychologists: Definitions, Explanations, Links is a resource. It represents a reference tool to be kept at hand and accessed again and again, as needed. Its roughly 400 entries provide facts, clarify concepts, and define terminology. Also included are many internet links selected for their relevance to school psychologists. You will find that entries range from one-sentence definitions to paragraph-length elaborations. Each was prepared so as to align with practitioners' preferences for breath and depth. Some entries are quite specific to school psychology (e.g., links to ethical codes, legal definitions of various categories of educational disability). Others come from one or more of the fields closely related to school psychology (e.g., from psychopharmacology names of medications that might be encountered in students' files; from statistics and measurement terms like Cohen's *d*, which might be needed when reading a table of scores). In fact, part of the impetus for the book is the vast array of fields related to school psychology, each with their own terms and facts (see Figure below). Entries in the book are arranged alphabetically, and there is extensive cross-referencing. Although this book includes internet links, it is predicated on the notion that relying on the internet often proves surprisingly inefficient. Finding what is needed online typically proves to be too slow; content found there is often overly generic in nature or it may lack credibility. Several links found in the book come from authoritative sources, such as official position statements (e.g., a multi-group statement on vision training). Other conclusions found in the book rest on summary sources found in the literature (e.g., a meta-analysis on the efficacy of group contingencies). In general, I've tried to include in a single source material that experience indicates is sometimes needed. I hope you find it useful.

In cases where detailed information is included (i.e., facts not commonly known by practitioners and trainers), I have added references. For common-known information, no references are provided. Verbatim wording is quoted with attribution. Should any other wording match that already written elsewhere, this represents a coincidence and was entirely unintended.



Figure Introduction.1 The many and diverse fields related to the practice of school psychology

I. A – B

ABAB (see reversal ABAB design)

ABC (in applied behavior analysis)

Refers to “antecedents,” “behavior” and “consequences.” These three aspects are often used to conceptualize the cause of students’ behavior and to devise informed behavior intervention plans (also see behavior intervention plan).

***Abilify*® (see anti-psychotic medication)**

Absence seizures

These were historically referred to as “petit mal seizures,” a term that school psychologists will sometimes still hear. The seizures consist of short lapses of consciousness, often characterized by a blank stare. Familiar and dramatic seizure signs (e.g., jerking, falling, loss of consciousness) are absent as are post-seizure drowsiness or confusion. When present in children, absence seizures can occur many times per day. They may be mistaken for ADHD. (also see epilepsy.)

Accommodation(s)

Typically concerns adjustments to instruction for students with Section 504 designations (also see Section 504 definition).

Adaptive behavior

Concerns mastery of self-care, communication, socialization, and functional skills needed to succeed in one’s daily environment. In school psychology practice, problems of adaptive behavior are typically screened for with subtests included in parent-completed rating scales (e.g., Behavior Assessment System for Children-Third Edition; Reynolds & Kamphaus, 2015) or assessed in-depth by lengthier and more detailed measures (e.g., Vineland Adaptive Behavior Scales-Third Edition; Sparrow, Cicchetti & Saulnier, 2016) that require interview of a child’s parent or caregiver. Limitations in adaptive behavior are one criterion for a diagnosis of intellectual disability (also see intellectual disability).

Adderall® (see stimulants and other ADHD medications)

ADHD medications (see stimulants and other ADHD medications)

Advance organizer

A teaching strategy to help students learn by offering them higher-level cues or “hooks.” The originator of the advanced organizer notion, educational and cognitive psychologist David Ausubel (2000), advocated an organized curriculum rather than less-structured discovery methods of learning. The logic is that advanced organizers aid students by having them link what is to be learned to what they already know. The effect is to make learning less rote and more meaningful and to facilitate learning and retention. Subsumed under the advanced organizer concept are diverse techniques exemplified by concept mapping and coaching students to pre-read (skim) before they read for meaning and retention. In other words, what is to be learned is organized in advance of learning itself. Research continues to demonstrate enhanced learning when instructional techniques tie pre-existing knowledge together with new information (e.g., Koscianski, Ribeiro, & Silva, 2012, in high school physics). This concept is important for school psychologists who sometimes recommend these strategies. Similarly, school psychologists might hear teachers discuss their use.

The following link from the State University of New York provides details:

http://people.sunyit.edu/~lepres/thesis/principles/19_pdfsam_POD.pdf

Affect and mood

Often assessed as part of a mental status exam, these two dimensions are easily confused. Mood refers to a state that is (generally) stable and internal in that it is known to the individual (Serby, 2003). Affect, in contrast, is external (thus observable) and subject to momentary changes. Thus, a teen might be described as having hypomanic mood with labile affect. School psychologists may encounter references to affect and mood in extra-school psychiatric reports. Some school psychologists may also describe a student’s affect and/or mood when they conduct a clinical interview. The table below indicates some commonly used terms as well as the meanings of those that may not be self-evident.

Mood		Affect	
Commonly-used descriptor	Everyday meaning	Commonly-used descriptor	Everyday meaning
“manic”	extremely elevated	“blunted”	extremely restricted
“hypomanic”	elevated	“constricted”	restricted
“euthymic”	normal range	“flat”	reduced
“dysthymic”	mildly sad	“inappropriate”	not fitting context
“depressed”	markedly sad	“normal”	unremarkable
“anxious”	anxious	“full range of”	varying across normal range
“irritable”	irritable	“lack of”	absence of
		“incongruent”	inconsistent with one’s mood
		“labile”	rapidly and unpredictably changing

Affective disorder(s)

A general term denoting a mood disorder of some type. The conditions that might be included under this broad and imprecise label include persistent depressive disorder, major depression, bipolar disorder, and seasonal affective disorder. See DSM-5 (e.g., pages 123-188) for details on various affective disorders.

Agoraphobia

Literally fear of public or open places. In psychology, agoraphobia concerns avoidance of diverse settings outside the home, typically because a panic attack is anticipated or feared in these settings. For school psychologists, school avoidance coupled with anxiety/fear may suggest a problem akin to agoraphobia. Also see DSM-5, page 217.

Alopecia

Loss, or severe thinning, of hair on the scalp. This phenomenon may arise from chemotherapy, in which case the entire scalp is typically involved, or from selective hair pulling (trichotillomania), in which case bald patches often appear. Alopecia is important for school psychologists because of the obvious social stigma it engenders. If the cause of alopecia is trichotillomania, then school psychologists may help direct the family toward treatment or themselves initiate a behavioral program. Also see entry for trichotillomania.

Alphabetic principle

An early developmental accomplishment related to oral reading signaled by students' realization that printed letters stand for sounds, which in turn can be grouped to form words. There appear to be large variations when children master this principle. For example, those residing in homes with few books or parents who seldom read may arrive at kindergarten with no sense of the alphabetic principle. In contrast, those coming from homes many books and parents who routinely read may enjoy solid mastery of the principles even prior to teachers starting formal reading instruction.

See the following link from the University of Oregon: http://reading.uoregon.edu/big_ideas/au/au_what.php#what

American Board of Professional Psychology (ABPP)

A credentialing agency concerning 15 areas of psychology practice, ranging from “behavioral and cognitive psychology” to “school psychology.” A credential is issued based on a review of professional preparation, work samples and oral examination. Practicing school psychologists holding this credential often add “ABPP” to their degree when they sign documents. This credential is restricted to psychologists licensed for independent practice in their respective state, effectively confining the credential to doctoral level psychologists.

The following link concerns ABPP generally, with information regarding school psychologists found at the same site: <https://abpp.org>

American Psychological Association (APA)

A large organization concerned with psychology broadly, including both its scientific and practice aspects. Consequently, APA encompasses a membership as diverse as university professors, practitioners in industry, as well as those in clinical and applied settings, such as schools. APA comprises 56 divisions, of which Division 16 is dedicated to school psychology. In general, membership in APA is restricted to doctoral level psychologists. Not surprisingly, APA accredits training programs for doctoral level psychologists. These include programs in school psychology. It also publishes its own code of ethics. Further, Division 16 publishes a newsletter, *The School Psychologist*, and a scholarly journal, *School Psychology*.

Some important APA links follow:

- Home page: <http://www.apa.org/>
- Division 16: <http://www.apa.org/about/division/div16.aspx>
- Ethical Principles and Code of Conduct of Psychologists: <http://www.apa.org/ethics/code/index.aspx>
- Student Affiliates in School Psychology: <http://apadivision16.org/sasp/>

Anafranil® (see anti-depressant medications)

Angelman syndrome

Caused by a microdeletion in chromosome #15 in a mother's egg. Strangely, this same microdeletion causes another syndrome, Prader-Willi, when it arises in father's sperm. There is typically no family history; the syndrome is caused by random events. It is relevant to school psychologists because boys and girls with Angelman syndrome routinely express profound developmental disability, seizures, poor muscle tone, small head size, and unusual looking facial characteristics. They are typified by a happy disposition and floppy muscle tone, which led their condition to be described earlier as the "happy puppet" syndrome.

Additional information is available from the following NIH links: www.ninds.nih.gov/Disorders/All-Disorders/Angelman-Syndrome-Information-Page as well as from the Angelman Syndrome Foundation: www.angelman.org/

Anti-anxiety medications

This group of medications, commonly prescribed for adults, is less often used with children. When prescribed, these medications (also called anxiolytics) are typically employed for brief duration to help manage severe anxiety or to help a youngster through a particularly difficult, time-limited situation.

The group of anti-anxiety medicines described as benzodiazepines (e.g., *Valium*) act by promoting greater availability of GABA in the brain; they can prove sedating. In contrast, the "atypical" anti-anxiety medications (e.g., *BuSpar*) appear to work via serotonin rather than GABA; they are believed to be less sedating and less prone to engender dependency. Also, compared to other medications in the anti-anxiety group, *BuSpar* is sometimes used for longer intervals. Finally, a medication in the class called beta-blockers, *Inderal*, controls heart rate and blood pressure as well as anxiety (such as fear of public speaking). The table below summarizes information on anti-anxiety medications that school psychologists might encounter.

Trade name	Generic name	Sub-category	Onset of effect
Ativan®	lorazepam	benzodiazepine	Rapid
BuSpar®	buspirone	atypical anti-anxiety	Delayed
Inderal®	propranolol	beta-blocker	Rapid
Klonopin®	clonazepam	benzodiazepine	Rapid
Neurotin®	gabapentin	anticonvulsant	Rapid
Valium®	diazepam	benzodiazepine	Rapid
Xanax®	alprazolam	benzodiazepine	Rapid

Anti-depressant medications

Although the name suggests that medicines in this group are restricted to treating depression, their use is actually more varied than this. Included are uses for school phobia, panic attacks, obsessive-compulsive disorder, and posttraumatic stress disorder. The tricyclic anti-depressants are also sometimes used to treat bedwetting and ADHD. Each subcategory of anti-depressant typically includes its own side effects profile, such as weight gain for serotonin specific reuptake inhibitors (SSRIs), or dry mouth for (tricyclic antidepressants). Some contain stringent dietary restrictions, such as no cheese or chocolate for individuals taking monoamine oxidase inhibitors (MAOIs). SSRIs include warnings about elevated suicidal thoughts or actions. The table below summarizes information on anti-depressant medications that school psychologists might encounter.

Trade name	Generic name	Subcategory	Onset of effect
Anafranil®	clomipramine	tricyclic anti-depressant	Delayed
Celexa®	citalopram	‡SSRI	Delayed
Cymbalta®	duloxetine	*SNRI	Delayed
Desyrel®	trazodone	atypical anti-depressant	Delayed
Effexor®	venlafaxine	*SNRI	Delayed
Elavil®	amitriptyline	tricyclic anti-depressant	Delayed
Fetzim®	levomilnacipran	*SNRI	Delayed
Lexapro®	escitalopram	‡SSRI	Delayed
Luvox®	fluvoxamine	‡SSRI	Delayed
Nardil®	phenelzine	†MAOI	Delayed
Pamelor®	nortriptyline	tricyclic anti-depressant	Delayed
Parnate®	tranylcypromine	†MAOI	Delayed
Paxil®	paroxetine	‡SSRI	Delayed
Pristiq®	desvenlafaxine	*SNRI	Delayed
Prozac®	fluoxetine	‡SSRI	Delayed
Remeron®	mirtazapine	atypical anti-depressant	Delayed
Serzone®	nefazodone	atypical anti-depressant	Delayed
Tofranil®	imipramine	tricyclic anti-depressant	Delayed
Trintelli®	vortioxetine	serotonin modular	Delayed
Viibryd®	vilazodone	‡SSRI	Delayed
Wellbutrin®	bupropion	atypical anti-depressant	Delayed
Zoloft®	sertraline	‡SSRI	Delayed
‡SSRI = Selective serotonin reuptake inhibitor; *SNRI = Selective norepinephrine reuptake inhibitor; †MAOI = Monoamine oxidase inhibitor			

Anti-psychotic medications

The so-called “typical” anti-psychotic medications were developed, as their name implies, to treat symptoms of psychosis. Their development in the 1950’s permitted many hospitalized adult patients with schizophrenia to leave institutionalized care. Unfortunately, the typical anti-psychotics exerted an influence largely confined to positive symptoms of schizophrenia (e.g., hallucination, delusion). Practically speaking, this meant that many patients remained impaired because of persistent negative symptoms of schizophrenia, such as lack of initiative or inability to formulate or carry out a plan to aid themselves in daily life. When the “atypical” antipsychotics were developed in the 1980s, the situation often improved because they targeted negative symptoms often left untouched by the older typical anti-psychotics. Much of the initial use of both typical and atypical anti-psychotic medications, however, concerned adults.

Critical to school psychology practice, sometimes atypical anti-psychotics are now used for nonpsychotic youth expressing frontal lobe and executive impairments. Thus, use of atypical antipsychotics has grown dramatically in the practice of child psychiatry. For example, atypical antipsychotics are sometimes used to diminish explosive outbursts in children who seem to suffer extreme problems with impulse control.

There are other uses of anti-psychotics besides the treatment of schizophrenia or overt psychosis. For example, older typical anti-psychotic medications (e.g., *Haldol*) are sometimes used to reduce severe tics in cases of Tourette syndrome. Both typical and atypical anti-psychotics carry risk profiles, such as development of severe motor problems late in the cycle of treatment (so-called tardive dyskinesia). The table below summarizes information on anti-psychotic medications that school psychologists might encounter.

Trade name	Generic name	Sub-category	Onset of effect
<i>Abilify</i> ®	aripiprazole	atypical	Delayed
<i>Catplyta</i> ®	lumateperone	atypical	Delayed
<i>Clozaril</i> ®	clozapine	atypical	Delayed
<i>Fanapt</i> ®	iloperidone	atypical	Delayed
<i>Geodon</i> ®	ziprasidone	atypical	Delayed
<i>Haldol</i> ®	haloperidol	typical	Delayed
<i>Invega</i> ®	paliperidone	atypical	Delayed
<i>Latuda</i> ®	lurasidon	atypical	Delayed
<i>Mellaril</i> ®	thioridazine	typical	Delayed
<i>Navane</i> ®	thiothixene	typical	Delayed
<i>Prolixin</i> ®	fluphenazine	typical	Delayed
<i>Rexulti</i> ®	brexpiprazole	atypical	Delayed
<i>Risperdal</i> ®	risperidone	atypical	Delayed
<i>Saphris</i> ®	asenapine	atypical	Delayed
<i>Seroquel</i> ®	quetiapine	atypical	Delayed
<i>Stelazine</i> ®	trifluoperazine	typical	Delayed
<i>Thorazine</i> ®	chlorpromazine	typical	Delayed
<i>Vraylar</i> ®	cariprazine	atypical	Delayed
<i>Zyprexa</i> ®	olanzapine	atypical	Delayed

Anxiolytics (see anti-anxiety medications)

Apgar score

School psychologists may see Apgar scores listed in students' medical/developmental records. The score is named for Virginia Apgar, an obstetrical anesthesiologist. It represents a quick test often performed after birth by medical professionals. Typically, two scores are reported (e.g., 7/9 or 9/10), the first indicating the sum of values across five dimensions at one minute following birth, the second at five minutes following birth. The dimensions listed below are used to generate a 0-10 scale.

- Breathing effort (2, 1, 0)
- Heart rate (2, 1, 0)
- Muscle tone (2, 1, 0)
- Reflexes (2, 1, 0)
- Skin color (2, 1, 0)

These are relevant because higher Apgar scores indicate the newborn more easily adjusted to life outside the womb; scores of 7, 8 or 9 denote good health. Perhaps contrary to intuition, the scores are not designed to predict later learning and developmental problems. Nonetheless, low Apgar scores are associated with some negative outcomes (Valla, Birkeland, Hofoss, & Slinning, 2017), such as poor development of communication skills. Also see entries for low birth weight and for preterm birth.

For additional information from the American Academy of Pediatrics, see the following link: <https://pediatrics.aappublications.org/content/136/4/819>

Aptitude x treatment interaction

An intuitively plausible idea that remains contentious many years after it was first widely discussed (Snow, 1989). One variation of the idea is that students' individual differences in learning style (aptitude differences) may affect learning such as that one curriculum (treatment) works better for one style than another. If this were true, teachers could use this information to plan for individual students, especially those with SLD. Simply put, a teacher could match a student's learning style to a complementary teaching approach. For example, visual learners might receive instruction with lots of charts, graphs, and they might read texts silently and try to visualize the content of passages to aid understanding and retention. In contrast, auditory learners might receive lectures and oral discussion to maximize their understanding and retention. Because students with SLD presumably express information processing weaknesses (to be avoided) and strengths (to be capitalized on) this approach garners considerable intuitive appeal. But matching students and instruction in a manner like this (sometimes referred to as tailoring instruction to a modality preference) has long been criticized (e.g., Kavale & Forness, 1999). Problems include technical limitations in reliably detecting a student's preferred modality and a dearth of controlled studies supporting the practice.

Moving from special needs students to large samples of typical learners, researchers have sought interactions when style is matched to instructional approach. In some experimental studies this is referred to as "meshing." In general, it appears that results are not favorable. For example, one study that used adult learners characterized as either preferring "visual learning style" or "auditory learning style" detected no benefit when learning style was used to guide instruction. That is, the visual group's anticipated advantage when given e-books and the auditory group's anticipated advantage when given audiobooks failed to eventuate (Rogowsky, Calhoun & Tallal, 2015).

On the other hand, some genuine aptitude X treatment interaction effects have been reported when students' levels on a dimension (e.g., above average working memory vs. average or lower working memory) is used as the aptitude variable. This is exemplified in a study by Fuchs et al. (2014) that found working memory level interacted with instructional approach when teaching at-risk students an aspect of arithmetic (i.e., fractions). Specifically, one teaching method (aimed at building fluency) was found better for students toward the low end of the working memory continuum, whereas another teaching method (aimed to consolidate understanding) was found better for students who possessed more fully developed working memory.

Arithmetic (computational) terminology

In speaking with teachers, it is sometimes important to be conversant in instructional terminology. The figure below provides a few terms pertaining to elementary computational arithmetic.

Examples of arithmetic terminology (terms in parentheses)

7 ("addend") + 7 ("addend") = 14 ("sum")

8 ("minuend") - 2 ("subtrahend") = 6 ("difference")

36 ("dividend") \div 6 ("divisor") = 6 ("quotient")

$\div 9$ ("factor") \times 6 ("factor") = 54 ("product")

Ascertainment bias

Refers to a type of bias that threatens the validity of psychological or educational research findings. Specifically, ascertainment bias exists when participant recruitment creates a non-representative sample (when in fact representativeness is crucial). For example, assume researchers are interested in how often students with reading problems also experience clinical levels of depression. Carelessly, these researchers post a recruiting poster in a reading clinic that says: "Sign up your child for an important study of reading and depression." Obviously, parents of depressed children might be more likely to enroll their youngsters than are parents in general. Now when researchers compare depression rates among youth with reading problems and youth in general (the latter being a random control sample) erroneous inferences are a real risk. In this case the biased sample of readers may over-express how strongly reading problems and depression co-exist. This is an important consideration for school psychologists because many quasi-experimental studies (those comparing a clinical group with a control group) suffer ascertainment bias. The solution to such problems is for researchers to, for example, recruit consecutive cases and report in their published findings detailed information about participant recruitment (often they do not). The solution for practicing school psychologists is to be vigilant when reading studies comparing youth with and without a particular clinical condition.

Assistive technology (AT)

For school psychologists, mostly relevant in planning for and assisting students with special needs. A variety of procedures, many of which are electronic in nature, have been used to support students and circumvent barriers to learning. AT applications range from helping students with severe cognitive impairments to supporting college students with circumscribed learning disabilities. For example, a recent survey and meta-analysis of AT that concerned adolescents/adults with specific learning disabilities is summarized in Table 1 (Perelmutter, McGregor & Gordon, 2017).

Research has also addressed AT applications to youth with intellectual disabilities. A review (Mechling, 2007), for example, found that AT had the ability to aid the initiation and execution of daily tasks. Some aspects of AT were electronic (e.g., computer-aided systems), whereas others were much more low-tech in nature (e.g., pictorial or auditory prompts). Because they are located on school campuses, school psychologists can sometimes observe first-hand which AT works best for which student (as opposed to adopting a one-size-fits-all approach).

Effect of assistive technology on adolescent and adult functioning			
Nature of device	Exemplar commercial products used	Dependent variables	Magnitude of effect
Text to speech	Kruzeil 3000®, ClassMate Reader®, Bookwise®	Reading comprehension	Moderate
Speech to text	DragonDictate®, IBM VoiceType®	Variety on variables	Moderate to large
Word processing (with spell/grammar check)	Modern word processing programs	Error rate	Large
Multi-media (e.g., hyper-text)	N/A	Variety of variables	Small to large
Smart pen	LiveScribe®, Quicktionary®	Reading comprehension	Moderate
Modified from Perelmutter, McGregor and Gordon (2017)			

Association of State and Provincial Psychology Boards (ASPPB)

An organization that is responsible for the licensure and certification of psychologists across the United States and Canada. Among ASPPB's tasks are development and implementation of the psychology license exam entitled the Examination for Professional Practice in Psychology (EPPP). EPPP is a vehicle for licensure among doctoral level psychologists, only a relatively few of whom practice in schools.

For more information see the following link from ASPPB: http://www.asppb.net/?page=What_is_ASPPB

Asthma

Asthma is one of the most common childhood illnesses. It ranges in severity from mild and intermittent, which is typically treated by primary care physicians, to chronic, severe, and life altering, and thus often treated by pediatric pulmonologists or allergists. Individuals with asthma experience periodic, or sometimes chronic, inflammation and thickening of the airways. Breathing becomes difficult and the child may feel uncomfortable. For some, sleep becomes problematic. Asthma-related deaths occur occasionally. Not surprisingly, some students with asthma suffer illness-related school problems. These include difficulty focusing and concentrating because of concern about their breathing,

occasionally medication side effects, rarely (but important when it occurs) hypoxia (i.e., low oxygen levels in the blood stream). School absenteeism may be a problem.



Photo courtesy of NIH

Because of concern about the effects of asthma on youth, the National Institutes of Health has recommended educational programs that extend into communities and their schools. One such program that enjoys empirical support is entitled *Staying Healthy-Asthma Responsible & Prepared*. This program blends information about biology, psychology, and sociology with school subjects such as spelling, math and reading. Students who participated in this program have shown improved knowledge and reasoning over students enrolled in a non-academic program about asthma (Kintner et al., 2015).

The following link from the Centers for Disease Control offers strategies for addressing asthma school: https://www.cdc.gov/asthma/pdfs/strategies_for_addressing_asthma_in_schools_508.pdf

Ativan® (see anti-anxiety medications)

Attending physician (see psychiatric hospitalization)

Attention-deficit/Hyperactivity Disorder (ADHD)-authority to make diagnosis

Diagnostic authority regarding ADHD is controversial and without a clear consensus. The National Institute of Health (NIH) suggests it be done by a licensed professional. Interestingly, however, NIH enumerates physicians, psychologists, and social workers as candidates to do so, as long as they possess experience in ADHD. This is important because NIH fails to mandate that the diagnosis be made by physicians, contrary to what school psychologists might hear in their school setting.

Critically, because licensing is handled at the state level, local licensing and authority provisions determine who is legally authorized to make diagnoses like ADHD outside of schools. That said, research (Viser et al, 2015) suggests that school personnel assign ADHD diagnosis in only about 2.8% of cases. In contrast, more than 50% of the time diagnoses are assigned by primary care physicians, such as pediatricians or family practitioners. Non-school-based psychologists (e.g., licensed psychologists in private offices) make school-age ADHD determinations in about one in seven cases.

More details are available at the following link: www.cdc.gov/nchs/data/nhsr/nhsr081.pdf.

Attention Deficit Hyperactivity Disorder (ADHD)-obligation to identify and provide 504 Services

Perhaps some of the longstanding uncertainty and ambiguity about qualifying students with ADHD for services under Section 504 of the *Americans with Disability Act* was recently diminished. The source of clarification was a July 2016 letter from the Office of Civil Rights entitled “Dear Colleague.” Its intended audience was school districts, including professionals employed there. This is important because there is much misinformation about students with ADHD and the role of their schools in identifying and helping them. The following points were made in this letter

- A school district must evaluate students who are suspected of having any kind of disability in all specific or all related areas of education need, even if the students do not fit into one suspected disability category or fit into multiple disability categories. (p. 18)
- It is the district's obligation to evaluate; it cannot shift the burden of that cost or obligation onto the parent. (p. 19)
-concentrating.....is [itself] a major life activity (as required for Section 504 designation)
- "OCR [Office of Civil Rights] will presume, unless there is evidence to the contrary, that a student with a diagnosis of ADHD is substantially limited in one or more major life activities." (p. 10)
- "Mitigating measures [medications, coping strategies] shall not be considered in determining whether an individual has a disability." (p. 5)
- The requirement to provide a Free Appropriate Public Education (FAPE), as required by Section 504 as well as IDEA, can be insured by the creation of an IEP (IEPs are not restricted to special education students).
- Plans often fail at the implementation level, which violates the FAPE requirement.
- If the district suspects that a student has a disability....it would be a violation of Section 504 to delay the evaluation in order to first implement an intervention.... (p. 17)
- It is important that school districts appropriately train their teachers and staff to identify academic and behavioral challenges that may be due to a disability so a student is referred for an evaluation under Section 504....(p.17)
- ...there is nothing in Section 504 that requires a medical assessment as a precondition to the district's determination that the student has a disability (p. 23).

A link to the entire document follows: <https://www2.ed.gov/about/offices/list/ocr/letters/colleague-201607-504-adhd.pdf>

Audiometer

A device used to determine the hearing level of individuals. In schools, audiometers are often used to screen all students as well as part of selective, in-depth assessments conducted by audiologists.

Auras (related to seizures)

Refers to a sensation (perception) near the start of a seizure. Auras may range from specific sensations to generalized feelings. They occur only in some individuals with epilepsy. For other students, auras may also appear as a prelude to a migraine headache.

Autism (Autism Spectrum Disorder)-diagnostic considerations

School psychologists are often involved in eligibility decisions for students suspected of autism. Note: "autism" is one of the 14 categories of IDEA, and schools have an obligation to identify students with autism who need special education and related services. Because most school psychologists are less familiar with autism eligibility than with SLD eligibility, they may be unsure as they proceed. Consequently, they are encouraged to remember to practice ethically and in the best interest of the student.

First, a psychometric test is mandatory to establish eligibility. For example, both IDEA and DSM-5 list criteria for autism (or autism spectrum disorder [ASD]) and each criterion can be confirmed (or disconfirmed) by the things

that school psychologists routinely do in practice: observe, interview, review records, speak with parents, speak with teachers. As an aside, a criterion-by-criterion examination of IDEA's autism and DSM-5's ASD criteria shows that the two are virtually identical (DSM-5 is a bit more stringent and it contains many more details). Although formal instruments are not required, there are many rating scales (and at least one test-like procedure) that can add value to the diagnostic process. This is true because these instruments afford known (and often favorable) diagnostic utility statistics (sensitivity and specificity). These include: the *Autism Spectrum Rating Scale* (Goldstein & Naglieri, 2013), the *Childhood Autism Rating Scale-Revised* (Schopler, Van Bourgondien, Wellman, & Love, 2010) the *Autism Diagnostic Observation System-2* (ADOS-2, which has a test-like format; Lord, Rutter, DiLavore, & Risi, Gotham & Bishop, 2012).

Second, diagnosis and planning for students with autism requires prior experience. This is commonsense and it is also reflected in professional standards concerning autism diagnosis (e.g., the American Academy of Neurology and the Child Neurology Society, see link at the end of this section). For practitioners who seldom see students with autism, or for beginning practitioners encountering their first such cases, mentoring by a senior colleague who shares in the decision-making process makes good sense.

Third, intellectual disability (ID) is a marked risk for all students with autism. IQ and adaptive testing are sometimes required to rule out this possibility (in other cases timely acquisition of developmental milestones or evidence of academic success are sufficient to rule out ID).

Fourth, in the presence of intellectual disability and/or autism, practice guidelines suggest the need for medical input. This is because medical etiology for each of these conditions can often be established (e.g., more than 50% of the time). Not infrequently, the cause turns out to be a condition that is potentially preventable in subsequent pregnancies. For example, students with autism spectrum disorder and fragile X syndrome signify a 50% risk that males subsequently born to the same parents will also suffer fragile X syndrome. Intellectual disabilities associated with lead ingestion or fetal alcohol syndrome prompt considerations about prevention. Unfortunately, research suggests that school psychologists are often reluctant to think about medical etiology (Wodrich, Tarbox, Gorin, & Balles, 2010). In light of all of these facts, when school psychologists and their school teams establish the presence of autism, a copy of their report, with "autism" highlighted, is often sent to the child's primary care physician (after parents sign a release form).

The American Academy of Neurology guidelines on screening and diagnosis of autism are available at the following link:

http://tools.aan.com/professionals/practice/guidelines/guideline_summaries/Autism_Guideline_for_Clinicians.pdf

Autism (federal) definition

The IDEA definition of autism is as follows: *Autism means a developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age three, that adversely affects a child's educational performance. Other characteristics often associated with autism are engagement in repetitive activities and stereotyped movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences. Autism does not apply if a child's educational performance is adversely affected primarily because the child has an emotional disturbance, as defined in paragraph (c)(4) of this section. A child who manifests the characteristics of autism after age three could be identified as having autism if the criteria in paragraph (c)(1)(i) of this section are satisfied.*

See the following link: <https://sites.ed.gov/idea/regs/b/a/300.8/c>

Autism (Autism Spectrum Disorder)-treatments

A surprising array of treatments are sometimes advocated for children with autism. School psychologists, of course,

are most familiar with special education (e.g., special class placements, resource services) and related services (speech-language, applied behavior analysis). School psychologists can familiarize themselves with the type of services available and the empirical support for each.

For starters, they may wish to consider the following link from the National Institutes of Health: <https://www.nichd.nih.gov/health/topics/autism/conditioninfo/treatments>

Basal readers-basal reading series

This refers to a series of reading textbooks that are integrated across grade levels. School districts typically adopt a single basal reading series comprising stories with increasingly complex vocabulary, nuanced content, and challenging comprehension requirements. For most series, extensive instructional and support material is provided for teachers by the series publisher. As one might suspect, these reading programs are carefully constructed to teach component skills and provide sufficient practice to develop competent readers among most of the school population. Recognition of basal reading series is important for school psychologists because districts vary in their practices for disabled readers. In some school districts, for example, special education reading instruction must continue to use basal readers exclusively, whereas in other settings clinical reading programs, supplemental material, or alternative approaches are routinely used. These may even replace the district's basal series for some special needs students.

Base rate

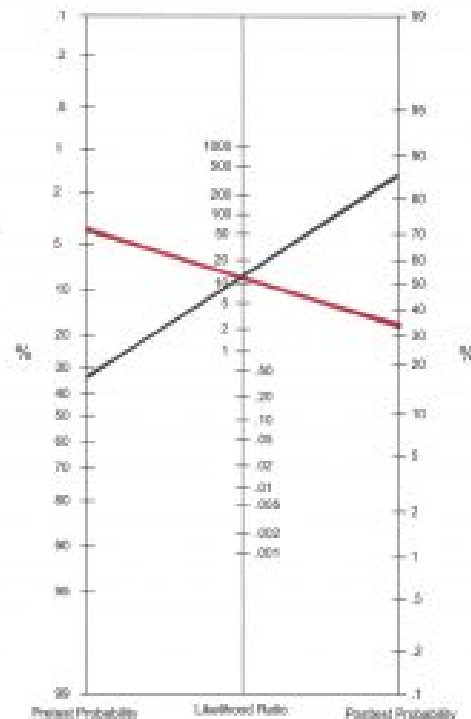
The rate of occurrence of a particular condition in a particular setting (sometimes also referred to as the local prevalence rate). Base rates can be used in Bayesian analyses where they are treated as pretest probabilities.

Bayesian (probability) nomogram

A graphical method of determining (or at least estimating) the probability that a particular condition (e.g., autism, ADHD) is present based on existing diagnostic information. This procedure has the advantage of systematically updating probability as additional sources of diagnostic information are added. Use of a nomogram is said to be Bayesian because the procedure rests on Bayes law. Although Bayes' law is expressed in a mathematical formula it can also be summarized verbally. Simply put, any test's predictive value when positive is equal to its sensitivity multiplied by its base rate divided by the percentage of those who test positive. To preclude the need to plug numbers into a formula and make calculations, a simple chart (a nomogram) can do the work.

Typically, several steps are involved in using a nomogram. The first is entering a known, or estimated, base rate of the condition under consideration (sometimes called a local prevalence rate). This value is specific to the local setting in which a diagnostician finds herself. It assumes that preliminary work has been done so that base rate information is known regarding a particular condition. For example, pediatric bipolar disorder (PBD) is confirmed to occur at different rates in different practice settings. This is known because practitioners have kept track of occurrence rates at their sites over a period of months or years. To illustrate, the PBD general population prevalence rate is approximately .006 among general high school students. In contrast, the base rate has been found to be .02 among adolescents at an incarceration center, .06 at a general outpatient clinic and .30 among adolescents in a psychiatric hospital (Youngstrom, 2007). Base rate information proves to be vitally important for judgments about the presence of PBD. Base rate values (or other prior probability information) is entered into the left column of the nomogram.

The next step requires accessing a relative risk, which is expressed as a ratio (see separate entry) or a diagnostic likelihood ratio (see separate entry). Either of these indicates how much more likely a particular diagnosis (e.g., PBD) exists among youth in a select group (e.g., individuals with a certain co-morbid condition, with scores above a cut-off value) than among youth in general. The nomogram permits this second value to be combined with the first (base rate) value to reach an updated (posttest) probability. For example, assume the base rate for autism among elementary students undergoing psychoeducational evaluations is .04 in District A. Also assume that a diagnostician uses the *Autism Diagnostic Rating Scale* (ASRS; Goldstein & Naglieri, 2013) and accesses sensitivity and specificity information in the ASRS manual. It is possible for her to calculate a DLR, which turns out to be 11.2 for this test concerning this diagnosis. She can then apply the ASRS's DLR of 11.2 to the nomogram's second column. A line connecting the two columns shows that there is a revised probability of autism, based on just those two pieces of information, between .30 and 40%. Contrast this with District B where the autism base rate has been found to be much higher, say .35. A diagnostician in District B goes through the same steps using the nomogram but a vastly different posttest probability eventuates. In District B, ASRS's DLR (11.2) results in a post-test probability of more than .85. These are depicted in the accompanying figure by the red and black lines, respectively. For clinical-like use of Bayesian nomogram



Nomogram depicting posttest probabilities associated with two different pretest probabilities

procedures school psychologists need additional details, practice, and guidance. To that end, extensive information, including blank nomogram forms, is available at the website of Eric Youngstrom at the University of North Carolina. <http://ericyoungstrom.web.unc.edu>

It appears that school psychologists are beginning to hear about application of the nomogram to their practice. Examples include applications in detecting SLD via score scatter on the *Kaufman Assessment Battery for Children-II* (Kaufman & Kaufman, 2004). Unfortunately, Bayesian nomogram procedures failed to aid in SLD detection regardless of the degree of subtest scatter (McGill, 2017). In contrast, the nomogram procedures worked when detecting ADHD. Specifically, scores from a screening test (the *Pediatric Attention Disorders Diagnostic Screener*) appear to offer assistance depending on the local base rate and students' scores (Keiser & Reddy, 2013).

Behavior Bingo (see group contingency interventions)

Behavior intervention plan (BIP)

A formulated plan, often detailed in written form, designed to promote behavior change. BIPs often identify one or more problematic behaviors to be diminished in parallel with one or more positive opposites to be promoted.

Behavior plan failure (how to troubleshoot)

School psychologists often consult with teachers (or parents) to devise behavior intervention plans (BIPs). Unfortunately, even the best BIPs sometimes fall short. There are several things that school psychologists might do to improve the prospect that their plan works. Asking oneself these questions is one way to troubleshoot.

1. Is the target behavior actually in the child's current response repertoire? If it isn't, it may help to consider shaping. It is a common error to expect the child to execute behavior beyond his/her capability. Consider revising the BIP to demand simplified behavior or break down complex behavior into small components. In other words, consider using the principle of successive approximations.
2. Is the reinforcement sufficiently strong? In token economies, for example, the cost of back-up reinforcers is sometimes set too high. Students may simply lack motivation at the trade-in value currently set. Similarly, in traditional contingency management systems, weak reinforcers (e.g., 10 minutes of computer time) contingent on extensive execution of target behavior (e.g., 2 hours of sustained homework completion) might be destined to fail.
3. Is reinforcement delivered promptly? Delays between the student's target behavior and delivery of reinforcement diminishes reinforcement potency. Sometimes it helps to shrink timelines; completing homework on Monday for a Friday evening privilege may doom a BIP.
4. Is the program implemented with integrity? Among the most common limitations of BIPs is that their elements are not really followed. It can help to monitor how teachers and parents are going about putting the plan into effect. The same is true regarding making sure that stakeholders are actually invested in a BIP's success. It may be necessary to re-teach and re-motivate those who are implementing the plan.

Benzodiazepines (see anti-anxiety medications)

Bili lights (see neonatal jaundice)

Bladder incontinence (see enuresis)

Bowel incontinence (see encopresis)

Broadband scales (also narrowband scales)

Refers to behavioral rating scales designed to cast a broad net for the detection of psychopathology and related problems. For example, the Behavior Assessment System for Children-Third Edition (BASC-3; Reynolds & Kamphaus, 2015), includes a broad measure of psychopathology (the Behavioral Symptom Index), slightly narrower indices of internalizing and externalizing psychopathology, and many still-narrower scales corresponding to specific emotional-behavior problems (e.g., depression, anxiety, attention problems). Scales like this are especially important for school psychologists when they may lack refined hypotheses about the nature of a particular child's potential emotional-behavioral problem(s) or when they simply seek to screen across various dimensions. Consequently, such scales are quite popular, the BASC-3 version for teachers, for example, representing the most frequently used of all psychological assessment tools (Benson, Floyd, Kranzler, Eckert, Fefer & Morgan, 2019).

Bruxism

Non-functional (i.e., purposeless) grinding or clenching of the teeth. Nocturnal bruxism is far more common than bruxism occurring when a child is awake. The literature reports rates from roughly 6% to nearly 50% of youngsters (Machado, Dal-Fabbro, Cunali, & Kasier, 2014). Although causes are unknown, dental problems (e.g., poor alignment of teeth) and psychological factors (e.g., stress) are implicated. Complaints of headache or earache may accompany bruxism. Chronic bruxism among awake children may be associated with developmental delay and/or pervasive neurological disorders or (more rarely) tics or obsessive-compulsive disorder. To avoid progressive tooth damage and promote quality of life, ongoing dental care is often important. Thus, school psychologists sometimes play advocacy roles when they encounter students with bruxism.

For more information see the following link at the American Academy of Pediatrics website:

<http://pediatrics.aappublications.org/content/131/3/614#xref-ref-18-1>

Buros Center for Testing

A potentially important site for school psychologists that offers classic (in print) resources such as the *Mental Measurement Yearbook* and *Tests in Print*. Probably more relevant for contemporary practitioners, the center also

publishes online reviews and critiques of tests likely to be encountered in practice. More information is available at the following link:

<http://buros.org/test-reviews-information>.

***BuSpar*[®] (see anti-anxiety medications)**

2. C – D

Callosal agenesis (see corpus callosum)

Categorical

When used in the context of psychological assessment, refers to placing individuals into categories (e.g., students with autism, students with ADHD). During the assessment process, the categorical approach is often contrasted with the dimensional approach (see separate entry for dimensional approach).

Catplyta® (see anti-psychotic medications)

Celexa® (see anti-depressant medications)

Central Auditory Processing (CAP) Disorder

According to the National Institutes of Health, a central auditory processing disorder is “an inability to differentiate, recognize, or understand sounds; hearing and intelligence are normal.”

Although some students may indeed suffer deficits in CAP, meaningful application of the concept in schools may be problematic. First, CAP assessment used in isolation may seem to explain a student’s classroom problems, but the explanation may seem far less compelling in the presence of comprehensive psychoeducational assessment data. Research seems to support this conclusion. When UK researchers used a comprehensive battery (CAP plus cognitive, attention, language, academic measures) non-CAP explanations typically explained classroom problems. It was children’s response variability (presumably indicating attention problems) and their cognitive scores that best predicted outcome variables such as listening and speech-in-noise skills. These results prompted the authors to caution, “APD [auditory processing disorder] is primarily an attention problem and that clinical diagnosis and management....should be based on that premise.” (Moore, Ferguson, Edmondson-Jones, Ratib, & Riley, 2010 p. e382).

Second, it is likely that most childhood CAP assessments occur in audiologists’ offices. Audiologists then sometimes make unilateral judgments about a students’ root problem without consulting other professionals (e.g., school psychologists, speech-language pathologists) whose assessment findings may be compelling. Similarly, it is unknown if most audiologists are capable of (or inclined to) integrate their findings with those of other professionals. Few audiologists seem to attend IEP meetings. Although ruling out hearing problems is of obvious importance whenever a classroom problem exists, school psychologists will need to decide if, and when, ruling out a problem with CAP is also needed.

Cerebral palsy (CP)

CP denotes static (non-progressive) problems with motor control, balance or posture that arises from injury (or impaired development) to motor centers in the brain. For example, circumscribed damage in the right frontal cortex (in the “motor strip”) may result in movement problems evident on the left side of the body. In practice, school psychologists may see students with a history of prematurity presenting with CP (i.e., prematurity is a documented risk factor for CP). Indeed, the structural brain impairment that causes CP often happens prenatally or shortly after birth. Diagnosis of CP is typically established before age 3 years.

The following link provides additional information: <https://medlineplus.gov/cerebralpalsy.html>

Check-in, check-out (CICO) intervention

This intervention (also sometimes call Behavior Education Program) targets students with minor problems (e.g., non-compliance, poor focus on academic instruction). As might be suspected from its name, the intervention involves a student “checking-in” with a teacher or coordinator in the morning and “checking out” with the same individual at day’s end. At check-in, preparedness is assessed and addressed (e.g., possession of needed books and supplies) and a daily report card is typically supplied. At check-out, points are dispensed as described in the daily report card, rewards might be distributed, and praise dispensed. Copies of reports typically are sent home for parents’ signature. Regular meetings of related school professionals (e.g., a coordinator who oversees behavioral supports) is typical. A systematic review of CICO interventions found generally positive results, with most studies in elementary school suggesting intervention-associated reductions in problem behavior; nearly all high school CICO applications enjoyed favorable results (Hawken, Bundock, Kladis, O’Keefe & Barrett, 2014).

Clinical norms (as contrasted with representative norms)

This refers to a set of norms collected from individuals with a particular disorder or a particular status (e.g., children with ADHD diagnoses; children referred to an outpatient mental health clinic). Obviously, it is necessary for school psychologists in their practice to distinguish test scores derived from representative samples as entirely different from those derived from clinical samples. For example, a T-score of 50 on an index of “inattention” means one thing if associated with representative norms and something entirely different if associated with clinical norms, such as norms for children with ADHD. The former 50 T-score implies average range inattention, whereas the latter 50 T-scores implies inattention at a level like a typical child with ADHD. Sometimes both representative and clinical norms exist. For example, assume a student with suspected intellectual disability has a Vineland Adaptive Behavior Scale-III composite standard score below 50 using representative norms and a co-existing composite standard score of approximately 100 using norms for individuals with intellectual disability (clinical norms). This information suggests the child has adaptive skill development quite unlike most typically-developing children but quite like children with intellectual disability. These dual facts may add assurance in reaching a diagnosis over either set of norms alone. Interestingly, a few scales provide only clinical norms (e.g., the Childhood Autism Rating Scale-2; Schopler, Van Bourgondien, Wellman & Love, 2010).

Clozaril® (see anti-psychotic medications)

Cloze procedure

A reading-related technique that involves removing one or more words from a passage of text. If used for skill development purposes, the procedure encourages students to use context clues to fill empty blanks. Typically, students are permitted to read silently or aloud. The emphasis, however, is on the ability to provide an acceptable equivalent of a missing word. This sharpens not only decoding but also reading comprehension skills. If a cloze procedure format is for informal assessment purposes, the process involves tabulating student success in filling the empty blanks. Scores across several items can be used as a simple indication of reading comprehension on the passage involved. Alternatively, a cloze-procedure-like scale (e.g., Woodcock-Johnson – III Reading Comprehension) can be used as part of a standardized reading assessment where raw scores are converted to derived scores (e.g., standard scores or percentile ranks). The example below exemplifies a very brief version of a cloze procedure.

Example of cloze procedure: Noah was hungry. So he was happy when lunchtime finally came. He walked with his classmates to the cafeteria where he smelled the _____(1). The cafeteria was very noisy, but he did not care. He wanted to _____(2.) Among acceptable answers are #1 food, cooking, meal; #2 eat, start, chow down.

Cognitive behavior therapy (CBT)

CBT is an important non-pharmaceutical option for treatment of depression, anxiety, and PTSD. As its name implies, cognitive behavior therapy uses a host of behavioral principles joined with focus on faulty cognitions that are thought to underlie depression, anxiety, or strong reactions to prior trauma. The diverse array of components comprising a behavioral cognitive therapy regime are exemplified in a study of PTSD conducted by Smith and colleagues (2007). Children in the active treatment group received 10 weeks of individual therapy comprising the following:

- psychoeducation
- activity scheduling to reclaim life
- reliving prior trauma through imagination
- cognitive restructuring
- revisiting the site of the trauma
- stimulus discrimination regarding reminders of the trauma
- work to manage nightmares
- techniques to transform negative images
- behavioral experiments

Following conclusion of CBT treatment, 92% of participants no longer met criteria for PTSD, whereas 42% of individuals on a waitlist still satisfied criteria. Interventions tailored to various disorders, often outlined in detailed manuals, are also available. Although school psychologists themselves may only occasionally engage in CBT, they may still have roles

regarding CBT treatment, such as when they serve as an advocate for children or as a liaison with extra-school service providers.

Cohen's *d* (see effect size)

Commissurotomy (see corpus callosum)

Comorbidity

It is common for individuals who experience one disorder to concurrently experience one or more additional disorders. Comorbidity concerns the rate of these additional disorders. For example, a review of the literature indicates that the comorbidity rate for a specific learning disability when ADHD is present exceeds 40% (DuPaul, Gormley & Laracy, 2013). Using this example, it is easy to see that school psychologists would need to be vigilant for the prospect of a specific learning disability when a student with pre-existing ADHD is encountered.

One problem with use of comorbidity statistics, however, is the tendency to fall victim to the “inverse probability fallacy.” We are all prone to confusion and think that when two things often go together that their conditional probabilities are the same regardless of which of the two things is taken as a given. Some simple examples make this fallacy clear. It is true that more than 95% of NBA basketball players are taller than 6 feet, whereas it is patently false that 95% of men taller than 6 feet are NBA players. In psychology it is easy to understand that if 75% of individuals with schizophrenia have co-existing depression it does not logically follow that 75% of individuals with depression have co-existing schizophrenia.

Concerta[®] (see stimulants and other ADHD medications)

Conjoint behavioral consultation

Behavioral consultation, such as conducted by a school psychologist, in which both teacher(s) and parent(s) fill the role of consultees. For more information see Sheridan and Kratochwill, 2007.

Conners Continuous Performance Test-3 (see continuous performance tests)

Consanguinity

Mating of close relatives, often defined as first cousins or closer. Although such practices are rare in the United States in general, and indeed most states have laws prohibiting such marriages, marriages of close relatives continue to exist among some subcultural group. This is important for school psychologists because consanguinious marriages carry a

risk for inherited disorders, especially those that are autosomal recessive in nature. One Swedish study conducted in the 1990s illustrates this fact. Researchers found that 21% of childhood cases of severe intellectual disability in one region were attributable to consanguinous marriage, a finding driven by specific cultural practices in this region (Fernell, 1998).

Continuous performance tests (CPT)

A group of individually administered tests (almost always involving use of a computer or similar electronic device), typically designed to measure students' ability to focus and inhibit impulses. In CPTs, stimuli are typically presented at a fixed (rapid) pace, over several minutes, as correct responses and errors are tracked electronically. Norms and cut-scores typically exist. At least three continuous performance tests are popular as adjuncts to ADHD diagnosis: the Conner's Continuous Performance Test-3 (Conners, 2014), the Gordon Diagnostic System (Gordon, 1983), and the Tests of Variables of Attention (TOVA; Greenberg, Holder, Kindschi & Dupuy, 2017). In general, these tests have been criticized for weak sensitivity and specificity (Reilly, Cunningham, Richards, Elbard & Mahoney, 1999; Zelnik, Bennett-Black, Miari, Goez, & Fattal-Valevski, 2012), which suggests that under many circumstances they may add little to ADHD determinations.

Continuous reinforcement (see schedules of reinforcement)

Contralateral

Refers to the opposite side of the body. This is an important concept for school psychologists because there is contralateral expression of many unilateral (one side only) brain problems. Most descending motor pathways and ascending sensory pathways cross between the brain and the body. This means, for example, that a birth injury in the right side of the brain may lead to sensory or motor problems predominately (or exclusively) in the left side of the body. This might be found, for instance in a child with cerebral palsy or traumatic brain injury that is focal (isolated) in nature.

Contrecoup (see coup/contrecoup injuries)

Coprolalia

Recurrent, dysregulated utterances of obscenities (e.g., references to bodily functions, sexual acts) that are often repeated in a ritualistic way. These are important for school psychologists to recognize because they may occur among individuals with Tourette syndrome. They may be only rarely seen, however, outside of Tourette syndrome.

Corpus callosum

The large bands of myelinated fibers that connect the right and left cerebral hemispheres. School psychologists

sometimes (rarely) encounter children whose corpus callosum has been severed to prevent seizures spreading from one hemisphere to the other hemisphere (this surgery is called a “commissurotomy”). It is now more common, however, to see children whose corpus callosum never developed (this is called “callosal agenesis”). Somewhat surprisingly, many of these latter group of children have no history of developmental or school problems. Rather, there colossal agenesis is discovered serendipitously when they receive a CT or MRI of the brain after a head injury. The often unremarkable presentation of these students seems confusing because many school psychologists know about the odd configuration of findings reported among adults who have undergone commissurotomy. These adults act as if they have two centers of independent cognitive and sensory functioning within a single skull. Children with callosal agenesis unrelated to an underlying syndrome, however, rarely present in this manner. This is likely because another set of myelinated fibers connecting the right and left hemispheres (called the “anterior commissure”) continues to convey information from one hemisphere to the other.

For more information see the following link from NIH: <https://www.ninds.nih.gov/Disorders/All-Disorders/Agenesis-Corpus-Callosum-Information-Page>

Coup/contrecoup injuries

These notions are sometimes important for school psychologists who might be assessing students with traumatic brain injury (TBI). The term “coup” derives from the French word for “blow” (in this case a blow to the head). Practically, “coup” refers to the site of the blow whereas contrecoup (meaning backlash) refers to the site opposite the blow. Coup injuries are easy to conceptualize and so are their prospective neuropsychological consequences. A blow to the front part of the head might predict anterior coup injuries sufficient to cause problems with executive functions. Contrecoup injuries arise when the brain rebounds from a blow and suffers an impact 180 degrees from the coup site. For example, an anterior coup injury (front of the head) may be associated with a posterior contrecoup injury (back of the head) sufficient to cause problems with sensory input and interpretation, such as with vision. Although the terms can be helpful in reading medical records, most pediatric neuropsychologists caution that strict predictions from sites of injury to neuropsychological (or functional) problems are imperfect. The potential relevance of these terms aside, many children with TBI present with diffuse, not focal, impairments.

Cramer's V (see effect size)

Crystallized ability (see fluid and crystallized ability)

CT scan (see MRI)

Cue (see discriminative stimulus)

Curriculum based assessment and general outcome measures

Originally selected directly from students' curriculum material (e.g., passages in their reading books), curriculum-based assessments (CBAs) involve criterion-referenced measurement of students' skills (often on a repeated basis). CBAs were originally touted for their excellent content validity. Now, however, CBAs may consist of fixed, criterion-referenced academic probes that are not precisely related to any one student's curriculum (i.e., they are general, not curriculum specific). Thus, technically, many CBAs are actually merely "general outcome measures," criterion-referenced reading or math probes of graduated difficulty. Despite their lack of congruence with a student's curriculum, these measures still may have value as screening tools and as repeatable measures to help judge students' progress in basic academic skills.

Cursive (writing)

Penmanship characterized by flowing letters joined together. The cursive technique is generally taught after simple manuscript (printing). Cursive writing may have advantages of leading to faster and less effortful writing than use of manuscript printing.

***Cymbalta*® (see anti-depressant medications)**

Cytomegalovirus (see TORCH)

Daily (behavior) report card

A tool that targets designated aspects of classroom behavior (e.g., compliance, work completion). A daily report card typically consists of one or several ratings completed by a classroom teacher during the school day. The card is sent home (or made available electronically) each day for parental inspection. Because young students, and those with ADHD, benefit from clear expectations and frequent feedback, daily behavior report cards can be of assistance. As part of a behavior plan, incentives may also be distributed.

The following form is one of many examples of daily behavioral report cards: <http://www.pent.ca.gov/pos/cl/str/dailyreportcards.pdf>

***Daytrana®* (see stimulants and other ADHD medications)**

Declarative (explicit) memory

Refers to the memory system for retaining and retrieving episodes, facts, and explicit information. In contrast to the procedural memory system, the declarative memory system processes objective information and is accessible to conscious awareness. It is of obvious relevance for school psychologists because much of formal education concerns acquiring and retaining explicit knowledge.

Also, school psychologists often encounter students with neurological impairments, such as traumatic brain injury, for which there is risk of impairments in declarative memory. Such potential impairments can be assessed by standard psychometric techniques exemplified by those that require acquisition and consolidation of facts over time (e.g., list learning). It is often helpful to contrast the declarative memory system with the procedural memory system (habit-related, largely unconscious), which is supported by different brain structures. Depending on the nature of neurological impairment one memory system may be more affected than the other.

For more information, see the following link: <http://www.livescience.com/43153-declarative-memory.html>

Delusion

A strongly held belief that is false. Delusions often have an extraordinary character that reveals their implausibility (e.g., the belief that one's thoughts are being stolen; the belief that one is a reincarnation of Christ). Delusions can represent a key symptom of psychosis.

***Desyrel®* (see anti-depressant medications)**

Developmental delay (federal) definition

Children aged three through nine experiencing developmental delays. Child with a disability for children aged three through nine (or any subset of that age range, including ages three through five), may, subject to the conditions described in §300.111(b), include a child—

1. *Who is experiencing developmental delays, as defined by the State and as measured by appropriate diagnostic instruments and procedures, in one or more of the following areas:*
 - physical development
 - cognitive development
 - communication development

- social or emotional development
- or adaptive development; and

2. Who, by reason thereof, needs special education and related services.

Developmental milestones

Concerns ages at which important tasks are mastered. The idea is that delayed mastery of early developmental tasks (delayed milestones) predict later cognitive and developmental problems. Although children with severe intellectual disability typically suffer conspicuously delayed mastery of developmental tasks, slight delays often prove inconsequential regarding later global development. The same is true regarding domain-specific delays (e.g., language, motor) and later problems in the same domain. For example, Flensburg-Madsen and Mortensen (2017) examined mastery in the following domains, each assessed with multiple items in a large (N = 821) Danish study:

- Language (e.g., forming 3-word sentences)
- Walking (e.g., climbing stairs unassisted)
- Eating (e.g., drinking from cup unassisted)
- Dressing (e.g., putting on socks)
- Social interaction (e.g., distinguishing boys from girls)
- Toilet training (e.g., remaining dry during night)

Most domains were correlated with adult IQ but the values were modest (e.g., language domain and full scale IQ = -.19; language domain and verbal IQ = -.20; social interaction and full scale IQ = -.14). A better sense of the impact of delayed mastery is reflected in actual IQ score differences; those mastering sentence formation before 24 months had mean adult full scale IQ values of 107.0, whereas those with later than 24-month mastery had 100.6. Note, however, that mean values for both those with and without early delays are solidly average. But IQ and other scores collected during the school years (rather than adulthood) would probably reveal stronger effects. The key for most school psychologists may be to recognize truly delayed mastery of developmental milestones and then to carefully consider this information as just a single prognostic factor among many. To assist, the table below provides critical values for delays for each item in the Flensburg-Madsen and Mortensen dataset. School psychologists might find this information useful while remembering the values derived from a foreign (Danish) study.

The following link from the CDC may prove more user friendly: <https://www.cdc.gov/ncbddd/actearly/milestones/index.html>.

Developmental milestones, means and z scores from one study

Milestone	‡Mean	z = +1	z = +2
Turning head in right direction	12.2	16.8	21.2
Walking	13.7	16.0	18.3
Drinking from cup	17.4	21.9	26.4
Correctly naming objects or animals	17.8	23.2	28.6
Correctly naming pictured objects or animals	19.9	25.3	30.7
Eating using spoon	19.9	24.9	29.9
Playing with peers	20.6	26.5	32.4
Building tower	20.7	26.4	32.1
Climbing stairs	21.0	26.2	31.4
Forming sentence	22.7	27.6	32.5
Helping out at home	24.2	29.9	35.6
Picking things up	24.4	28.1	33.8
Control of bowels	24.7	30.7	36.7
Remains dry during day	25.4	31.4	37.4
Remains dry during night	26.3	32.8	39.3

Distinguishing boys from girls	26.7	32.4	38.1
Sharing experiences	28.6	33.1	37.6
Speaking properly	28.8	34.2	39.6
Donning socks	29.2	34.7	40.2
Buttoning	30.0	35.2	40.4
‡Age in months. Adapted from Flensburg-Madsen & Mortensen (2017)			

Developmental pediatrics, developmental pediatrician

Developmental pediatricians are physicians (MD, DO) who are first train in pediatrics and then afforded additional training concerning learning and developmental problems. This means that most developmental pediatricians possess some knowledge of psychology, psychiatry, neurology, and genetics. For school psychologists it is helpful to know that some developmental pediatricians include learning disabilities and dyslexia as part of their practices, although extensive use of psychometric tools seems to be rare regarding learning problems. Knowledge of IDEA and familiarity with school practices vary. More common is an emphasis on ADHD, autism, and enuresis or encopresis. Because of their background in pediatrics, developmental pediatricians are commonly referred children by primary care physicians.

Developmental regression

This refers to loss of previously attained developmental milestones. Rare in the general population, this phenomenon is not so uncommon among children with certain conditions that are routinely seen by school psychologists. For example, one study found that 36% of children with autism spectrum disorder had lost skills over time, most notably social and communication abilities (Gadow, Perlman & Weber, 2017). Obviously, any child who has experienced a developmental regression should be seen by a physician, often starting with the primary care physician.

Dexedrine® (see stimulants and other ADHD medications)

Diabetes

Diabetes is a disorder of blood sugar (glucose). In most cases of type 1 diabetes (also called type 1 diabetes mellitus), which is often diagnosed during childhood, insulin-producing cells in the pancreas are destroyed. Without insulin, sugar and other substances present in the blood stream are unable to be metabolized. This means that cells risk being starved of energy and unsafe levels of blood sugar can result. Diabetic crises are possible during which seizures, coma, and even death can result without prompt action. Management of diabetes, and prevention of crises, involves providing exogenous insulin (via injection) and adherence to a controlled diet. This works imperfectly, however. Consequently, children's bodies, including their brains, are at recurrent risk of insufficient access to sugar.

As one might suspect, unstable blood sugars can cause problems at school, such as with attention and classroom productivity. This possibility appears to be associated with mild academic risks generally but specifically with alterations in attention as sugar levels change. For example, Parent, Wodrich and Hasan (2009) found blood sugar stability correlated with classroom attention ($r = .53$). Moreover, an intervention that stabilized blood sugar was associated with improved classroom attention in a small, but tightly controlled, study conducted within classrooms (Daley, Wodrich, & Hasan, 2006).

Broader lifestyle and personal adjustment considerations also exist for students with type 1 diabetes. This is in part because of dietary restrictions, the need for ongoing monitoring of blood sugar levels, and the burden of repeated insulin injections. Such students may require supports and accommodations. Some students need an IEP (in the Other Health Impairment category) or a Section 504 accommodation plan.

Type 2 diabetes also involves insufficient blood sugar in the cells, although this occurs without destruction of insulin-producing cells in the pancreas. Type 2 diabetes is strongly associated with obesity. These children, too, can suffer

learning and adjustment problems. Not surprisingly, children with both types of diabetes may miss an inordinate amount of school and may require time out of class at the nurse's office.

A summary of the literature on diabetes and school is provided by Wodrich, Hasan and Parent (2011). Additional information about diabetes specifically tailored to teachers is available on the following website from the University of Arizona: <https://edmedkids.arizona.edu>.

The following National Institute of Health diabetes link provides information for school personnel:

<https://www.niddk.nih.gov/health-information/health-communication-programs/ndep/health-care-professionals/school-guide/Pages/publicationdetail.aspx>

Diagnostic and Statistical Manual of Mental Disorders-5th edition (DSM-5)

DSM-5 is the most recent iteration of the standard comprehensive catalogue of mental (psychiatric) disorders. It is vast in scope and extensive in detail, including descriptions and diagnostic criteria for virtually all recognized mental health, as well as some developmental, conditions. Although less commonly used in schools than in clinics, DSM-5 nonetheless is arguably an important resource for understanding children as well as for codifying a single diagnostic system applicable across settings (American Psychiatric Association, 2013).

Diagnostic interview procedures

This refers to various scripted interviews that systematically check symptoms (and associated impairments) related to an array of mental health disorders. Structured diagnostic interview techniques are frequently seen in the empirical literature concerning child psychopathology. Most require special training and are time consuming (see table below). Consequently, when school psychologists conduct clinical interviews, they are typically less structured, and they often address the nature of the student's circumstances and/or referral concern, not just fixed symptoms. Nonetheless, some diagnostic experts argue that without use of structured diagnostic interviews many important childhood disorders escape detection, thus depriving youth of needed treatment (Youngstrom & Van Meter, 2016).

Selected Diagnostic Interviews			
Title	Focus	Duration	Special training
<i>Schedule for Affective Disorders and Schizophrenia, School-age Children (K-SADS)</i>	DSM	1 hour +	Yes
<i>Diagnostic Interview for Children and Adolescents (DICA)</i>	DSM	1 hour to 1.5 hours	Yes
<i>Child Assessment Schedule (CAS)</i>	Content areas and DSM	1 hour or less	No
<i>Mini-International Neuropsychiatric Interview for Children and Adolescents (MINI-KIDS)</i>	Specific diagnoses and diagnostic groupings	As little as 15 minutes	Yes

Diagnostic utility statistics

These represent an important set of statistics that help school psychologists understand the validity of test scores in

making categorical decisions. The four to consider specifically are: sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV). All of these concern evidence of correct classification of individuals with scores above a fixed cut-point (positive test results) and below a fixed cut-point (negative test results).

- Sensitivity: the ability of a test to correctly classify those with a particular condition (0 to 100%).
- Specificity: the ability of a test to correctly classify those who lack a particular condition (0 to 100%).
- Positive predictive value: the likelihood that a positive test score (one above a cut-point) indicates the presence of a particular condition.
- Negative predictive value: the likelihood that a negative test score (one below a cut-point) indicates the absence of a particular condition.

These terms can prove confusing, at least at first. Most school psychologists need to read further. Sensitivity and specificity can be combined to create diagnostic likelihood ratios, which are an effect size indicator regarding categorical decision. Also of note, diagnostic utility statistics facilitate the use of Bayesian approaches to assessment as well as permit the use of probability nomograms.

The following link provide detailed information:

<https://www.statisticshowto.com/probability-and-statistics/statistics-definitions/sensitivity-vs-specificity-statistics/>

Dimensional

When used in the context of psychological assessment, refers to placing individuals on a continuum, often via use of standardized assessment tools. For example, IQ tests scores can be used to characterize students via a system with scores ranging across a vast continuum from the 40s to 140s. The dimensional approach is often contrasted with the categorical approach, where students are placed into discrete categories. For example, IQ tests could be used to help place students into categories such as those with intellectual disability or those with giftedness (see separate entry for the dimensional approach).

Direct instruction

An important concept for school psychologists because many failing students appear to benefit from carefully targeted practice of basic skills (e.g., reading, math). For example, struggling students seem to do best with instruction that maximizes engagement time and allows teachers control over the details of instruction, which are scripted for step-by-step delivery. Frequent, overt student responses are another hallmark of direct instruction. Research suggests that in reading students with SLD perform almost one standard deviation better than control students when their intervention emphasizes direct instruction (Adams & Engelmann, 1996). Not surprisingly, in many special education settings direct instruction is the workhorse. Still, less structured “discovery-oriented” methods arguably train students-in-general to learn problem solving and deeper understanding that would be impossible if only direct instruction were used. Thus, in the general curriculum (e.g., in science), one might encounter teachers using both direct instruction and discovery methods. Research implies that context and the precise goals of instruction, among other factors, should help determine the instructional approach adopted in each situation (Chase & Klahr, 2017; Rider, Burton & Silberg, 2006).

Note: There is a national organization and an accompanying website devoted to this topic: National Institute for Direction Instruction, <https://www.nifdi.org>.

Discipline referral

Mechanism used in schools for teachers to refer a student for disciplinary action. In generally, a designated school administrator receives or processes a discipline referral and selects among an array of potential actions (e.g., lunch detention, in-school suspension, parent conference). A tangible form (i.e., a discipline referral form) is routinely completed for each such referral. School psychologists often examine a student's history of discipline referrals when they review background information as part of an evaluation. It is also interesting that the number of discipline referral over time are now commonly used in educational research, such to determine the impact of PBIS on a school's overall level of discipline problems.

Discriminative stimulus

A term from applied behavior analysis that refers to a type of stimulus (i.e., sign, situation in the environment) that signals certain operant behavior(s) are now likely to be reinforced. For example, the presence of a classmate's welcoming smile might signal that approach is likely to be socially reinforced. In contrast, a different facial expression may indicate no such chance for success (no reinforcement). Humans learn to discriminate between the two situations (and countless others) to guide their behavior. School psychologists can examine the role of discriminative stimuli related to the behavior they want to increase or decrease. A discriminative stimulus may also be referred to as a "cue."

Dolch 220 list (see sight vocabulary)

Double-deficit hypothesis

The hypothesis that asserts dyslexia arises from a combination of deficits in phonological processing and speeded naming, rather than either alone (see, for example, Katzir, Kim, Wolf, Morris, & Lovett, 2008).

Down syndrome

Down syndrome is one of the most common genetic causes of intellectual disability. The majority of children with Down syndrome possess an extra chromosome #21 (this is an instance of aneuploidy [too many or too few chromosomes]). A minority of children have translocation of genetic material on chromosome #21. Routine psychological assessment of IQ, adaptive, academic and social/emotional assessment is generally called for. Intellectual disability is the rule. Because advancing maternal age is associated with heightened risk of Down syndrome and because a disproportionate risk for Down syndrome exists in subsequent pregnancies regardless of mother's age, many families with an affected child seek genetic counseling regarding subsequent pregnancies. Co-existing medical problems (e.g., cardiac defects) are common, as are facial and body characteristics.



Student with Down syndrome. Photo provided by CDC.

Two other facts are important for school psychologists. First, some children have a variation of Down syndrome characterized by mosaicism. This means that rather than all the individual's cells containing an extra #21 chromosome, some cells do whereas other cells do not (i.e., there are 47 chromosomes in some cells but the normal 46 in others). Individuals with the mosaicism variant of Down syndrome typically have fewer health problems and milder cognitive impairment. Second, Down syndrome may have a less stable cognitive and adaptive trajectory than other conditions causing intellectual disability. Specifically, early IQ and adaptive scores, which are often mild, may give way to relatively lower scores after age six years. Thus, repeated evaluation is often indicated.

More information is available at the NIH website and the National Down Syndrome Society: www.nichd.nih.gov/news/resources/spotlight/Pages/120814-DS-research-plan.aspx. Other facts can be found on the website from the National Down Syndrome Society: <http://www.ndss.org/>.

Duty to warn (see *Tarasoff v. California Board of Regents*)

Dyscalculia

Dyscalculia refers to a specific learning disorder in mathematics. Like dyslexia and dysgraphia (indeed all “neurodevelopmental disorders”), dyscalculia likely arises from diverse underlying causes. One well-studied possibility concerns deficits in representing “numerosities” (i.e., the number of objects in a set). It is hypothesized that this root problem sets in motion various related problems such as marked difficulty working with numerical values and associating these values with symbols. Some researchers have even equated deficient numerosity underlying dyscalculia to phonological deficits underlying many cases of dyslexia (Butterworth, Varma & Laurillard, 2011). Like dyslexia, however, dyscalculia likely reflects various underlying processing problems.

The National Institutes of Child Health and Human Development lists various possible expressions of dyscalculia:

- Problems understanding basic arithmetic concepts (e.g., fractions, number lines)
- Difficulty with math-related word problems
- Trouble making change in cash transactions
- Messiness in putting math problems down on paper

- Trouble recognizing logical information sequences (e.g., steps in math problems)
- Trouble understanding the time sequence of events
- Difficulty with verbally describing math processes

For most school psychologists, however, the standard steps followed in a psychoeducational evaluation and eligibility determination for a specific learning disability also apply in prospective cases of prospective dyscalculia. In their psychoeducational reports, school psychologists may refer to these students as expressing specific learning disabilities in mathematical reasoning or mathematical calculation.

Also see the following link from NICHD: <https://www.nichd.nih.gov/health/topics/learning/conditioninfo/symptoms#dyscalculia>

Dysgraphia (also see graphomotor)

This concerns extreme and persistent problems with the production of written work. Students with severe graphomotor problems that fail to respond to instruction may be said to have dysgraphia. According to the National Institute of Child Health and Development the following might also be observe among students with dysgraphia:

- Strong dislike of writing or drawing
- Grammatical problems evident in writing
- Struggles getting ideas down on paper
- Fatigue when writing
- Written narratives that lack a logical sequence
- Pronouncing words aloud (or subvocally) to assist in writing
- Written work that includes partially finished words or entirely missing words

Also see the following link from NICHD: <https://www.nichd.nih.gov/health/topics/learning/conditioninfo/symptoms#dyscalculia>

Dyslexia

According to the International Dyslexia Association, “*dyslexia is a specific learning disability that is neurobiological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge.*”

See additional information at the following link from the International Dyslexia Association: <https://dyslexiaida.org/definition-of-dyslexia/>.

Also see the following link from NICHD also pro: <https://www.nichd.nih.gov/health/topics/learning/conditioninfo/symptoms#dyscalculia>

Although school-based teams (especially their school psychology members) are not generally charged with detecting dyslexia per se, the concept, nonetheless, may still prove important in schools. This is because there is a vast empirical research base concerning dyslexia's causes, manifestations, and treatments. What's more, “dyslexia” is included specifically in the federal (IDEA) definition of specific learning disability (see entry for specific learning disability). In

addition, dyslexia is described in *DSM-5* as an alternative term for a specific learning disorder in reading (see *DSM-5* page 67). Finally, the U.S. Department of Education (2015) clarified that schools' use of term is not contraindicated "OSERS reiterates that there is nothing in the IDEA or our implementing regulations that would prohibit IEP teams from referencing or using dyslexia, dyscalculia, or dysgraphia in a child's IEP."

The following is a link to the 2015 letter from the U.S. Department of Education: <https://www2.ed.gov/policy/speced/guid/idea/memosdcltrs/guidance-on-dyslexia-10-2015.pdf>

3. E – F

Echolalia

This refers to a tendency to repeat the last thing heard (i.e., words, phrases), generally done in an odd and socially inappropriate manner. Echolalia is important for school psychologists to recognize because it sometimes occurs among individuals with autism but rarely among those without autism.

Ecological validity

Validity, the extent to which a test measures what it purports to measure, is sometimes problematic for the psychometric tests and standardized behavior rating scales used in schools. Ecological validity concerns validity derived from the context (setting) where test scores are actually to be applied. For example, a test of reading comprehension administered in a quiet environment where a student's motivation can be optimized and where there are no distractions may possess satisfactory classical validity. But its ecological validity regarding classroom reading success may prove far weaker. For example, some students who score well on a one-on-one reading test may be poor classroom readers and vice versa. The ecology of the school classroom introduces otherwise-missing elements that threaten straight-forward indexes of test validity. Thus, to enhance the ecological validity of school-related assessments, school psychologists often use classroom observations or work products, not just psychometric test scores. Because these derive from the classroom environment itself, they are said to possess relatively better ecological validity.

EEG (electroencephalogram)

EEG is a diagnostic test used by physicians (mostly neurologists) for diagnostic purposes, especially establishing the presence of epilepsy. The procedure involves placing small metal disks (electrodes) on the scalp. This permits examination of electrical brain activity, especially abnormal "tracings" that indicate epilepsy. Although EEG is used for research regarding learning and psychiatric problems, its use for clinical diagnosis regarding these conditions is rare and controversial.

Neurofeedback is a biofeedback procedure that uses EEG technology. The logic is that if brain waves associated with attentive states could be increased with biofeedback, then ADHD symptoms might be reduced. Therapeutic use of neurofeedback, however, generally involves relatively few electrodes compared to the procedures used by neurologists for epilepsy diagnosis. Some practitioners of neurofeedback may also lack extensive training in EEG technology. A meta-analysis offered the following conclusion: "evidence from well-controlled trials with probably blinded outcomes currently fails to support neurofeedback as an effective treatment for ADHD." (Cortese et al., 2016, p. 444).

Effect size (also see significance)

Effect size concerns one of several statistical terms describing the magnitude of association between research variables (or differences between experimental and control groups). In practice, school psychologists benefit by considering

effect size indicators plus indicators of statistical significance when they read research findings. Statistical significance merely concerns whether patterns are due to chance, whereas effect size concerns magnitude. Thus, effect size statistics help school psychologists judge whether differences might actually matter. The table below is a summary of commonly used effect size indicators.

Some Effect Size Indicators		
Comparison	Effect size statistic	Meaning of effect size statistic
Group means	Cohen's d	Difference between means of groups, in units of standard deviation
Correlation	R^2	Percent variance in outcome variable explained by predictor variable
Chi-square	Cramer's V	Percent of variance explained in one variable by the other variable
T-test	Omega squared ω^2	Percent of variance in dependent variable explained by independent variable
ANOVA	Eta squared η^2	Percent of variance in dependent variable explained by independent variable
Diagnostic likelihood ratio†	Diagnostic likelihood ratio (DLR)	DLR positive offers a ratio (from 0 to infinity) indicating an increased risk of a condition when a positive score is present DLR negative offers a risk (from 0 to infinity) indicating a decreased risk of a condition when a negative score is present
†(also see diagnostic utility statistics)		

Effective/efficacious

These terms have similar but distinctive meanings. An intervention is “effective” to the extent that it works, or provides benefit, in the real world. In contrast, an intervention is “efficacious” if it engenders results under optimum circumstances, such as in a carefully controlled clinical trial (Gartlehner et al., 2006). Obviously, the former is a much more stringent standard than the latter. Regarding educational research, some interventions prove efficacious (e.g., a reading program offered in optimum settings delivered by expert teachers) but not very effective (e.g., if applied in sub-optimal settings by rank-and-file teachers). As might be expected, relatively little educational research addresses the actual effectiveness of interventions.

Effexor® (see anti-depressant medications)

Elavil® (see anti-depressant medications)

Elision

This term concerns omission or change in a word or part of a word, which in psychometric testing is often used to assess phonological processing. For example, a task might require a child to first say the word “table” then to repeat the word leaving out the “t” sound (i.e., the correct response would be to say “able”). Subtests using this principle are

now common among tests of phonological processing and reading (e.g., Comprehensive Test of Phonological Processing, Wagner, Torgeson, Rashotte & Pearson, 2013; Kaufman Test of Educational Achievement-3, Kaufman & Kaufman, 2014).

Emotional disability (federal) definition

The federal definition, as found in IDEA, follows:

“One or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child’s educational performance:

- 1. An inability to learn which cannot be explained by intellectual, sensory, or health factors*
- 2. An inability to build or maintain satisfactory interpersonal relationships with peers and teachers*
- 3. Inappropriate types of behavior or feelings under normal circumstances*
- 4. A general pervasive mood of unhappiness or depression*
- 5. A tendency to develop physical symptoms or fears associated with personal or school problems*

Emotional disability includes schizophrenia. The term does not apply to children who are socially maladjusted, unless it is determined that they have a serious emotional disability.”

Also see the following link: <https://sites.ed.gov/idea/regs/b/a/300.8/c>.

Encopresis

Encopresis refers to an inability to exert voluntary control over fecal discharge. This may also be referred to as lack of “bowel control,” “fecal incontinence,” or “soiling accidents.” Of course, bowel control, like bladder control, is a developmental task. Recurrent daytime or nighttime accidents in children older than four years usually suggests a problem requiring professional attention. Consequently, it is important for school psychologists to encourage appropriate medical consultation as a first step in understanding and helping such children. Among medical explanations are fecal hoarding that in turn permits fecal seepage or diminished sensitivity to sensory cues from the bowel, lack of proper innervation of the bowel, or a systemic medical illness. Psychological elements may also be part of the cause (e.g., fear associated with using the toilet). For some children, there is no obvious explanation. Obviously, social stigma, teasing, and bullying are a risk for affected children. School psychologists may offer support for the student and family and they may assist in devising behavioral plans.

See the following link from the American Academy of Pediatrics for more details: <https://www.healthychildren.org/English/health-issues/conditions/emotional-problems/Pages/Soiling-Encopresis.aspx>.

Also see DSM-5, page 357.

Andrew F. v. Douglas County School District

This references a legal case decided by the U.S. Supreme Court concerning a student with autism. Parents contended that the student's IEP was insufficient to provide him with a Free Appropriate Public Education (FAPE), as required by law. A move to a private facility and change in the array of services seemed to prompt improvements in functioning, perhaps suggesting the prior plan was indeed insufficient. The Court's decision, which is complex, determined that IEPs must be "reasonably calculated to enable a child to make progress appropriate in light of the child's circumstances." This seems to represent a higher standard for FAPE than existed previously, which has obvious implications for all of those making decisions about students' special service needs (see O'Brien, 2018).

The following link from Cornell University provides details <https://www.law.cornell.edu/supct/cert/15-827>



Photo by David L. Wodrich

English Language Learner (ELL)

ELL denotes students whose primary language is not English. Beyond primary Spanish-speaking students whose participation in U.S. schools is obvious, many students from other linguistic backgrounds (e.g., Asian, Pacific-island, Native American) are also enrolled here. In fact, national data indicates that 27% of kindergarteners come from immigrant families (Sullivan, Hourii, & Sadeh, 2016). Especially relevant to school psychologists are the risk for these students to struggle academically and to be subject to social exclusion or discrimination. Thus, system-level practices that help assure all students are supported as they learn English arguably make sense. For example, the transition for non-English speaker to an academically-proficient English speaker may be underestimated by a teacher who misinterprets apparent fluency after a fairly brief interval of immersion. Teachers and administrators may similarly misestimate an ELL student's ability to succeed in routinely-taught academics, setting the stage for confusion and unreasonable educational practices, such as in reading (Albers & Hoffman, 2012).

Potentially more relevant to school psychologists is the obligation to conduct fair evaluations when special services might be considered. Small-scale research scrutinizing actual psychoeducational reports, for example, concluded that school psychologists often fail to comply with professional or legal standards (e.g., determination of primary language, ascertainment of acculturation information), when evaluating ELLs (Harris, Sullivan, Oades-Sese & Sotelo-Dynega, 2015).

The following link comes from the New Jersey Department of Education and concerns evaluation of ELLs: <http://www.state.nj.us/education/bilingual/news/FAQse.htm>. General resources for teachers is also available at the following link: <http://www.ncte.org/library/NCTEFiles/Resources/PolicyResearch/ELLResearchBrief.pdf>

Enuresis

Enuresis refers to an inability to exert voluntary control over urinary discharge. It may also be referred to as lack of "bladder control" or "bladder incontinence." Two variations are important for school psychologists to recognize, although they sometimes co-exist: (1.) nocturnal (nighttime) enuresis and (2.) diurnal (daytime) enuresis. The former is

much more common and appears to be related largely to maturation in sleep architecture (especially sleeping so deeply that cues to urinate go undetected). With advancing age, fewer and fewer children suffer from nocturnal enuresis. The second may arise from a host of medical problems (e.g., defects in the muscles of the urinary system, diabetes) or behavioral considerations (e.g., severe inattention to internal cues, acute anxiety episodes). For many children with diurnal enuresis, there is no obvious explanation. As with nocturnal enuresis, fewer and fewer children with daytime enuresis remain affected as they grow older. Among school-age children, it is important for school psychologists to encourage appropriate medical consultation and, potentially, offer psychological/behavioral assistance. This is especially true because left unresolved, enuresis may engender social ostracism or bullying or restrict social options (e.g., limit sleepovers or camping trips).

See the following link from the American Academy of Pediatrics for more details: <https://www.healthychildren.org/English/health-issues/conditions/genitourinary-tract/Pages/Nocturnal-Enuresis-in-Teens.aspx>. Also see DSM-5, page 357.

Epilepsy

Epilepsy is defined as recurrent, unprovoked seizures. Typically, seizure episodes have been witnessed by caregivers or teachers and subsequently confirmed by an electroencephalogram (EEG) as interpreted by a neurologist. This is an extremely heterogeneous disorder. For example, some students experience focal seizures (in part of the brain only), whereas others have seizures impacting the entire brain. In some ways, the site of a focal seizure focus may predict the kinds of learning problems school psychologists find during evaluation. That is, students with foci in the right hemisphere have, on average, greater problems with spatial and nonverbal tasks, whereas those with foci in the left hemisphere predict relative linguistic-related deficits (Kibby, Cohen, Lee, Stanford, Park & Strickland, 2014). Some students with epilepsy experience transient sensory or motor phenomenon that are barely noticed, whereas others suffer generalized tonic-clonic episodes with loss of consciousness and dramatic symptomology that often proves disturbing to classmates and teachers.

As a group, students with epilepsy encounter elevated rates of learning problems that vary in intensity, associated cognitive and academic aspects, and social stigma. Favorably, many students are seizure-free based on the use of one or more antiepileptic drugs. These drugs, however, sometimes produce lethargy, especially if more than one drug is needed. For students with “epilepsy only” (idiopathic), problems are generally markedly less severe than for their counterparts with symptomatic epilepsy (epilepsy as part of a broader underlying brain disorder). For example, Wodrich, Kaplan, and Deering (2006) found that the risk of intellectual disability was about five times higher, and the risk of speech language problems three times higher, in the latter than in the former group. Students with symptomatic epilepsy might include, for example, those with tuberous sclerosis complex or those with recurrent seizures after a traumatic brain injury. Some students with epilepsy qualify for Other Health Impairment services, although research is not clear regarding the extent to which this occurs.

Because teachers and classmates are often anxious when a student with epilepsy enrolls, school psychologist and nurses can sometimes provide valuable support services. Research shows that teachers often lack even basic information about the educational consequences of childhood epilepsy (e.g., fewer than 10% knew that epilepsy imposes a risk of attention problems, or depressive feelings, or threatens classroom learning; Wodrich, Jarrar, Buchholder, Levy & Gay, 2011). School psychologists might help by documenting any cognitive, memory or attention problems as well as assisting in formulating needed supports and interventions.

The following website provides epilepsy-related information specific to educators. <https://www.aesnet.org/>. Also see the following site from the University of Arizona that is devised for teachers: www.edmedkids.arizona.edu

EPPP (see Association of State and Provincial Psychology Boards)

Eta squared (see effect size)

Ethics codes (see National Association of School Psychologists; see American Psychological Association)

Ethnic incongruence

This term denotes a situation in which a student (or his/her parents) are members of one group but the school psychologist is a member of another group (Loe & Miranda, 2005). The presence of bias or stereotyping might be a risk associated with this situation.

Etiology

This is a term originally used only in medicine but increasingly applied in psychology to refer to the cause of a disorder. For example, the etiology of schizophrenia is largely genetic, with additional environmental factors causing the expression of symptoms. Similarly, the etiology of Down syndrome is a chromosome anomaly.

Every Student Succeeds Act (ESSA)

ESSA is a comprehensive federal education law signed by President Obama in 2015, making it the successor of the No Child Left Behind Act. Highlights include:

- critical protections for America's disadvantaged and high-need students
- proviso that all students will be prepared to succeed in college and careers
- collection and dissemination of results from annual statewide assessments
- support for local innovations, including innovations that are evidence-based and those that are place-based
- expanded support for high-quality preschools
- accountability and action for the lowest-performing schools

The following link from the U.S. Department of Education provides details: <https://www.ed.gov/ESSA>

Examiner drift

Once fully mastered test administration skills (e.g., faithful administration of the Wechsler Intelligence Scale for Children-5) are subject to deterioration over time—this is sometimes referred to as examiner drift. Examiner drift

appears to be a genuine risk in school psychology practice with potentially important consequences (e.g., invalid scores from test administration). Solutions might include overlearning of administration and scoring, video-recording and immediate self-appraisal, as well as deliberate practice that includes review by a peer (Antoniuk & Cormier, 2020). Some school districts appear to require routine observation and inter-examiner reliability checks for certain assessment procedures as a way to preclude examiner drift.

Executive function (EF)

EF refers to a set of hypothetical functions generally believed to be supported by the frontal lobes. EFs are held to orchestrate the initiation, sequencing, and cessation of lower-level cognitive skills so that humans can perform various tasks. Consequently, EF abilities include planning, working memory, set shifting, evaluation, and judgment. It is clear that some individuals with frontal lobe lesions suffer profound deficits regarding these skills. However, EF currently is invoked more frequently regarding developmental than acquired problems, specifically ADHD. ADHD authority Russell Barkley hypothesizes that failures of inhibition preclude students with ADHD from developing effective executive skills (Barkley, 2015). Without properly developed EFs, children with ADHD express the array of academic, interpersonal, and social-emotional difficulties that characterize ADHD.

Psychometric instruments and rating scales purporting to test EF are now abundant, although the extent to which these work in clinical practice is not entirely clear. This may be due to an overlap of EF with general cognitive ability on the one hand and with working memory and attention on the other hand. Moreover, many of the executive problems that may plague students are related to emotional regulation and control of affect (so called “hot executive function”), whereas psychometric techniques often concern only planning, cognitive flexibility, and impulse control (so called “cold executive function”). The extent to which EF is malleable is not entirely known. What’s more, there are questions about whether training in EF generalizes to real life.

Explicit memory (see declarative memory)

Externalizing psychopathology (see internalizing-externalizing psychopathology)

Extinction burst

This idea from applied behavior analysis concerns a burst in responding that occurs when previously reinforced behavior is no longer reinforced. In general, extinction can be favorable if used to eliminate bad habits (e.g., leaving one’s seat without permission) or unfavorable if desirable habits disappear (e.g., starting seatwork immediately when directed to do so). But one of the greatest problems with using extinction is failure to appreciate the phenomenon of extinction burst, described below.

Extinction burst is a temporary, dramatic surge in behavior when extinction is implemented. Not only might such behavior increase but it may become more intense (dramatic) or change in character. If extinction is allowed to proceed, the burst is temporary and substantial reduction and eventual elimination of the behavior follow. This is important for school psychologists because teachers or parents may attempt to reduce unwanted behavior by stopping reinforcement only to find the behavior soon worsens. For example, a second grade boy who makes silly comments (ostensibly for attention) is ignored by teachers and classmates in a simple behavior plan. Consistent with the notion of extinction

burst, however, the teacher soon discovers that the boy now makes even more frequent comments. Typically, these comments are now even sillier and louder than before the behavior plan was started. School psychologists can help teachers understand the nature of extinction and assist them in devising an effective plan. Often a functional behavior analysis (FBA) is needed.

Factitious disorder

This refers to made up, contrived, or falsified signs or symptoms associated with an illness or injury. Classically, this involves physical illnesses or psychiatric conditions of adults misrepresenting themselves to secure the attention of health care providers. For school psychologists, however, the symptoms may be created about another person, specifically a parent or guardian who falsifies symptoms of his/her child. Technically these later instances are now known as “Factitious Disorder Imposed on Another.” This same phenomenon is also sometimes referred to in medical settings as Munchausen by Proxy, a term that school psychologists may hear occasionally when speaking with a physician or when reading a medical record. School psychologists recognize that parents sometimes fabricate, or exaggerate, symptoms and/or their severity for diverse reasons. Regarding special education services, particular vigilance seems to be warranted, as address by Frye and Feldman (2012). Also see DSM-5, page 324.

False negative (see diagnostic utility statistics)

False positive (see diagnostic utility statistics)

Fanapt (see anti-psychotic medications)

FBA (see functional behavior analysis)

Fecal incontinence (see encopresis)

FERPA-Family Educational Rights and Privacy Act

FERPA is a federal law, applicable in schools, to protect the privacy of students’ records. Among its key provisions are parents’ (or adult students’) right to review records, to request correction of inaccurate records, and (in general) to have records released only on condition of their permission.

For more details, see the following link from the U.S. Department of Education: <https://www2.ed.gov/policy/gen/guid/fpco/ferpa/index.html>

Fetzima® (see anti-depressant medications)

Fluency

The notion of fluency relates to efficiency or speed, especially on psychometric tasks where both timed and untimed alternatives exist. For example, a test (or subtest) of “math computation” might consist of addition and subtraction problems for which students work without time limits. In contrast, a measure of “math fluency” might consist of addition and subtraction problems for which students complete as many problems as possible within 60 seconds. On the latter measure, students’ scores would equal the number of correct responses within the time limit. Obviously, some students possess academic skills but cannot (or will not) work quickly. Fluency measures help reveal and quantify such findings.

Fluid and crystallized ability

Consistent with the long-influential Cattell-Horn-Carroll (CHC) model (Horn & Cattell, 1967), this represents an important distinction between two related expressions of cognitive ability. Fluid ability concerns reasoning and problems solving relatively independent of cultural differences and prior experiences. Many of the tasks that measure fluid ability are non-verbal in nature and tap novel learning. In contrast, crystallized ability is conceived as more related to experience, including experience associated with various cultural and classroom exposures. Measures of vocabulary and general knowledge, for example, are often viewed as related to crystallized ability.

Flynn effect

The Flynn effect is an important research finding named after New Zealander James Flynn (2012). It refers to increases in IQ that have systematically occurred over many decades across many countries (especially industrialized nations). To be clear, the effect is expressed in raw score gains. This fact necessitates that IQ tests undergo routine re-norming, as out-of-date norms systematically result in inflated derived scores (e.g., IQ, percentile). For example, an IQ test normed 10 years ago might result in an entire population scoring 3 points higher on full scale IQ (e.g., mean IQ becomes 103) than would have been true a decade earlier. Of course, relatively higher IQ scores in clinical practice might influence identification of students with intellectual disability and giftedness. More subtly, it might affect consideration of students nearer the middle of the distribution when issues like specific learning disability determination are made.

School psychologists might find it interesting that gains appear more obvious on indicators of fluid reasoning than on experience-tied crystallized ability. This somewhat counter-intuitive finding, among related topics, was addressed in an edited book by Ulric Neisser (1998), which remains relevant despite its dated nature. Among Flynn’s own writing, his 2012 book might be of interest to readers.

Focalin® (see stimulants and ADHD medications)

Forest Grove School District v. T.A.

A potentially important legal case decided by the U.S. Supreme Court ostensibly concerning special education placement in private settings. The Court found that T.A.'s parents could be reimbursed for private school tuition after they unilaterally move their struggling child to a private setting. This was true even though T.A. had never received special services or been identified as a special needs student in his home school district. He had, however, received a school-based psychoeducational evaluation before his parents took him for a private, extra-school evaluation.

The Court's findings suggest that schools are obliged to conduct comprehensive evaluations sensitive to all, not just one or two, areas of disability, as called for in IDEA's Child Find requirement. It is also argued that psychological processes like executive function, memory, and attention ought to be routinely assessed (Dixon, Eusebio, Turton, Wright & Hale, 2011). Just what practice implications exist for school psychologists from this case, however, are subject to debate. Some authors contend that the Court's finding may not actually be so far reaching as to require routine use of cognitive and neuropsychological tools during special education evaluations (Zirkel, 2013).

The following link from Cornell University provides details:

<https://www.law.cornell.edu/supct/html/08-305.ZS.html>

Fragile X syndrome

Fragile X syndrome is important for school psychologists to understand because it is associated with intellectual disability and autism (Klusek, Martin, & Losh, 2014). Fragile X syndrome is a genetic disorder. To understand it, school psychologists need to consider some of its underlying genetic aspects.

First, fragile X is a disorder of one of the sex chromosomes, specifically an X chromosome, inherited from a parent. In order for signs and symptoms of fragile X to appear, a child must possess a mutation (in this case, a repetition of elements within a exact section of DNA). Specifically, the letters CGA are repeated too many times in fragile X syndrome. A very large number of excessive repetitions results in a "full mutation," whereas a subthreshold number of repetitions results in a so called "pre-mutation." As might be suspected, full mutations are apt to cause more pronounced physical and psychological problems, which are listed below.

Characteristics Sometimes Found in Individuals with Fragile X Syndrome
Physical features
Long and narrow face
Mandibular prognathia (overgrown lower jaw)
Pes planus (flat feet)
Abnormal pinna (e.g., large ears)
Macrocephaly (large head)
Joint hypermobility
Otitis media (inner ear infection)
Psychological features
Intellectual disability
Speech impairment
ADHD
Autism spectrum disorder
Self-injurious behavior
Source: NIH Genetic & Rare Diseases Information Center

Second, females with a chromosome containing a fragile X mutation (or pre-mutation) are typically less affected than males because they have two X chromosomes. This has led some to characterize females with the fragile X mutation (or pre-mutation) as mere “carriers.” However, research suggests that they too encounter elevated risk for a host of physical and psychological problems.

Third, the occurrence of fragile X can be understood using basic principles of Mendelian inheritance. Specifically, mothers who possess a fragile X mutation (or pre-mutation) have a 50% chance of passing it to each offspring. If it is passed to a male, he typically expresses the full array of physical and psychological features. Again, females who inherit a mutation (pre-mutation) are less affected. Similarly, 50% of offspring from affected mothers do not inherit her fragile X. Although many adult males with fragile X do not reproduce, each can potentially pass a fragile X gene to a daughter. Because sons inherit only the Y chromosome from their father, there is no father-to-son fragile X inheritance risk.

Fourth, fragile X syndrome exemplifies the broader genetic principle referred to as “anticipation.” This means that DNA repetitions (e.g., CGA) are often unstable and repetitions may grow in size during subsequent generations. Thus, if there is a fragile X pre-mutation in one generation, it may appear as a full mutation in subsequent generations. This means that across generations, conditions like fragile X might appear earlier and with more severe symptoms.

For more information, see the following links from the National Institutes of Health: <https://rarediseases.info.nih.gov/diseases/6464/fragile-x-syndrome>

Also see: Our Fragile World: www.ourfragilexworld.org/

Free appropriate public education (FAPE)

FAPE is one of the key legal guarantees for students with disabilities. The provision applies to students with special education designations (i.e., under IDEA) as well as those receiving Section 504 protection.

For more information, see the following link from the U.S. Department of Education:<https://www2.ed.gov/about/offices/list/ocr/docs/edlite-FAPE504.html>

Functional behavior analysis (FBA)

A specialized technique that is subsumed under the broader notion of applied behavior analysis. It involves discerning the purposes or functions of a student's unwanted behavior. FBAs require structured observation, interview, and data analysis. Once data are collected, it often becomes possible to look beyond the overt behavior itself and determine the underlying motivation of a student's actions. In turn, this can permit locating viable positive reinforcers to be capitalized upon (or negative reinforcers to be managed), thus enabling effective behavior intervention plans.

The following link from Vanderbilt University may be helpful:

<https://iris.peabody.vanderbilt.edu/module/fba/>

Fundamental attribution error (FAE)

FAE is a common cognitive distortion. It involves the human tendency to attribute others' actions to internal characteristics rather than situational factors (Hooper, Erdogan, Keen, Lawton & McHugh, 2015). For example, a student with recurrent fights on the playground is apt to be characterized as aggressive, whereas in reality he may be responding to situational factors such as bullying by a peer or frustration arising from classroom failure. FAE suggests that school psychologists should be particularly careful to consider context variables in their assessment of students (also see idiographic approach).

4. G – H

g

The general factor found in cognitive tests reflected in the positive correlation among many diverse measures.

Gene

A gene is generally thought of as a sequence of DNA (found on a chromosome) that codes for a specific physical structure as well as (relevant to school psychologists) behavioral traits or characteristics.

General outcome measure (see curriculum based assessment)

Genetic similarity (among relatives)

Researchers, especially those concerned with environmental and genetic influences on behavior, often use the degree of shared familial genes as part of their research. Because it is now known that many psychological characteristics are heritable, it is sometimes also helpful for school psychologists to reference information about shared genes. The table below summarizes the degree of genetic similarity among relatives.

- Identical twins = 100%
- Father or mother = 50%
- Brother or sister = 50%
- Grandfather or grandmother = 25%
- Uncle or aunt = 25%
- First cousin 12.5%

Geodon® (see anti-psychotic medications)

Gordon Diagnostic System (see continuous performance tests)

Good Behavior Game (see group contingency interventions)

Grapheme

A grapheme is the smallest element of print (e.g., a letter).

Graphomotor

Concerns the ability to write, such as by use of a pencil or pen. The multiple components necessary for effective graphomotor execution have been identified by Berninger and Richards (2002).

1. successful planning of finger movements
2. executing finger movements with precise timing
3. timing and coordinating of planning, executing, and learning (retaining over time) of movements
4. actual motor control
5. selecting the proper motor response
6. final successful execution

As might be expected, graphomotor problems are common among students with written expression disabilities. Research by Virginia Berninger and her colleagues at the University of Washington suggests that graphomotor problems constrain successful writing beyond the simple initial stages of first learning to write (including composition by older students; Berninger, 2009). Consequently, this is an important area that should not be overlooked by school psychologists.



Photo by Wadi Lissa, courtesy of Unsplash

Group contingencies

This behavioral technique is defined as methods for dispensing reinforcement either dependent on the behavior of a group, rather than an individual, or receipt of reinforcement as an undifferentiated group rather than a single individual.

There are various options. For example, an entire class might receive a reinforcement (e.g., extra free time) contingent on the actions of just one of its student members (or a small group of students). As an alternative, an entire class (i.e., all class members) might need to achieve some level of behavioral success so that the entire class (i.e., all class members)

become eligible to receive a reinforcement (e.g., extra class time). The former variation can be described as a “dependent group contingency,” whereas the latter can be described as an “interdependent group contingency.”

Variations in group contingencies notwithstanding, they appear to work. A meta-analysis (Maggin, Pustejovsky, & Johnson, 2017) of group contingency studies dating over four decades shows consistent effects, although most of the student behaviors targeted concerned either academic engagement or disruptive behavior. Additionally, most of the supporting evidence comes from general education students who are enrolled in late elementary school to late middle school. Even so, group contingency procedures seem to be one tool for school psychologists to consider when their consultation activities involve entire classrooms of students needing improved work habits and diminished disruptive behavior. Some examples of group contingency interventions are: Good Behavior Game (e.g., see Mitchell, Tingstrom, Dufrene, Ford & Sterling, 2014), Mystery Motivator (e.g., see Kowalewicz & Coffee, 2015), and Behavior Bingo (e.g., see Collins, Hawkins, Flowers, Kalra, Richard & Haas, 2018).

Haldol® (see anti-psychotic medications)

Head Start

Head Start is a federally funded program for preschool children and their families. Launched in the 1960s, Head Start was designed to help break a cycle of recurring poverty extending across generations. It envisioned a comprehensive set of services related to child development able to help communities meet the needs of disadvantaged preschool children. At present, Head Start serves more than one million children and their families each year in all 50 states and the District of Columbia. Currently, Early Head Start programs target pregnant women, infants, and toddlers, whereas Head Start picks up children once they reach three years of age. Most remain through age 4 years. Services address three things:

- Early learning
- Health
- Family well being

Details about Head Start are available at the following Department of Health and Human Services link: <https://www.acf.hhs.gov/ohs/about/head-start>

A program locator is also available at this link: <https://eclkc.ohs.acf.hhs.gov/center-locator>.

Hearing loss in children

School-age children may experience a hearing loss that mimics other classroom problems. In addition, younger children, such as those with documented special needs, may have hearing loss as part of their complex presentation. Consequently, all children undergoing psychoeducational evaluations should have completed a hearing screening. Those failing a screening should undergo an evaluation by an audiologist to address the nature and extent of any hearing loss. Several procedures are available. These include:

- Pure tone audiometry (simple test requiring youngsters to respond to various frequencies and intensities of sound)
- Auditory Brainstem Response (ABR) or Brainstem Auditory Evoked Response (BAER; an EEG-related technique that does not require active or voluntary responding by youngsters)
- Otoacoustic Emissions (OAE; a technique in which sounds are generated directly into the ear to allow detection of

- returning sound and permit inferences about hearing without a requirement for active or voluntary responding)
- Behavioral Audiometry Evaluation (changes in children's behavior when various sounds, at various frequencies, are introduced)

More detailed information is available from the CDC link: <https://www.cdc.gov/ncbddd/hearingloss/screening.html>.

The following link from NASP may be of assistance: <https://www.nasponline.org/research-and-policy/policy-priorities/position-statements/serving-deaf-and-hard-of-hearing-students-and-their-families-implications-for-education-and-service-delivery>.

Hemophilia

Hemophilia is a blood disorder characterized by lack of clotting factor and a risk of bleeding (e.g., from an open wound or within joints following a trauma). It is caused by an anomaly on the X chromosome, which means that females with this anomaly are carriers whereas males with it express the symptoms and signs of hemophilia. Hemophilia is important for school psychologists to appreciate because of the social and physical consequences associated with potential bleeding and because the condition appears to be a risk factor for ADHD and, potentially, school learning problems (Spencer, Wodrich, Schultz, Wagner, & Recht, 2009; Wodrich, Recht, Gradowski & Wagner, 2003).

The following links from the National Institutes of Health may be helpful: www.nlm.nih.gov/health/health-topics/topics/hemophilia/.

Additional information is available from the National Hemophilia Foundation: www.hemophilia.org/

Herpes simplex (see TORCH)

Heterogeneous (heterogeneity)

This refers to things that are mixed or diverse in type. Heterogeneity turns out to be an important concept because many conditions documented by school psychologists suggest a degree of homogeneity that may not exist. This is exemplified by the label specific learning disability (SLD). There is little homogenous about those students with SLD. SLD comprises students with diverse academic skill deficits (e.g., some in literacy, some in math), underlying problems (e.g., some in language, some in memory) and with divergent severity levels. Without appreciation of the heterogeneity associated with SLD, planning an effective program or anticipating future needs is constrained, a fact sometimes overlooked. Parallel considerations sometimes exist regarding clinical, not just administrative, labels. For example, students with autism (ASD) or ADHD are far from homogeneous.

HIPAA (Health Insurance Portability and Accountability Act)

A crucial federal law because it specifies how health service providers must protect the records and privacy of their patients. In general, schools are judged to be sites where HIPAA provisions do not apply. If health information is collected at school, it is typically considered to be for educational reasons. Instead, FERPA rules often apply.

The following link from the U.S. Department of Health and Human Services provides details relevant to school-

based practice: <https://www.hhs.gov/hipaa/for-professionals/faq/513/does-hipaa-apply-to-an-elementary-school/index.html>

Homeopathic treatment (of ADHD)

This concerns ADHD treatment resting on a non-traditional theory of medicine and health care. It is important for school psychologists because homeopathic practitioners may suggest children consume dilute amounts of substances to improve their learning or behavioral condition, such as ADHD. In general, like most “complementary” ADHD treatments involving dietary changes or use of supplements, those aligned with homeopathy are not currently advocated by the National Institutes of Health.

For information about ADHD treatment, including some non-traditional options, see the following National Institutes of Health link: <https://nccih.nih.gov/health/adhd/ata glance>.

For additional information see the following link from the American Academy of Pediatrics: <https://www.healthychildren.org/English/health-issues/conditions/adhd/Pages/Homeopathic-Treatment.aspx>

Huntington's disease

An autosomal dominant disorder. An affected parent confers a 50% chance for the disease to each of his/her offspring. Although Huntington's disease typically expresses its symptoms in adulthood, in some cases the symptoms appear during the school years. These consist of distortions in motor execution (chorea) and associated cognitive changes. The condition is also important to recognize because of its social consequences. Its midlife appearance means that special family stresses may confront some students. For example, students with a family history (e.g., a grandparent with Huntington's disease) often live with parents who must either be tested for the condition themselves or wait to see if symptoms appear.

Additional information is available from the National Institutes of Health: www.ninds.nih.gov/Disorders/All-Disorders/Huntingtons-Disease-Information-Page.

Huntington's Disease Society of America also provides information: <http://hdsa.org/>

Hyperbilirubinemia (see neonatal jaundice)

Hyperlexia

Concerns abnormally advanced reading skills, typically consisting of particularly strong oral reading coupled with limited reading comprehension. Hyperlexia is sometimes seen as a savant-like capability among children with autism.

Hyperphagia (see Prader-Willi syndrome)

5. I – J

IDEA (see Individuals with Disabilities Education Act)

Idiographic

Idiographic research approaches concentrate on study of individuals and their uniqueness. Often, they are qualitative rather than quantitative in nature. More important regarding assessment, an idiographic lens focuses on the unique strengths, weakness, perceptions, conflicts, feelings and environmental factor that are thought to lead to the expression of overt behavior. This approach can be contrasted, regarding both research and practice, with the nomothetic approach.

Idiopathic

A disease (or isolated symptoms) that occurs without a known cause, such as an underlying medical condition. Idiopathic scoliosis, for example, denotes spinal deformity without an underlying medical cause. Sometimes conditions important to school psychologists, such as epilepsy, occur without a known cause (i.e., are idiopathic). In other instances, the same appearance is due to an underlying condition, such as epilepsy associated with a head injury or a genetic condition like tuberous sclerosis complex. The latter instance could be said to be symptomatic rather than idiopathic.

IEP (Individualized Education Program)

A plan created annually for each student who receives special education and related services.

Implicit bias

This relates to automatic, often unconscious and unwanted bias concerning others, such as cultural, racial, or ethnic groups. Implicit bias is a particular concern when school psychologists are conducting assessments.

Independent education evaluation (IEE)

An IEE is an evaluation completed by a qualified examiner who is not employed by a school district (i.e., is independent). Parents have the right to an IEE under certain conditions: (1.) a school district has not adequately determined whether

a special education-related disability is present, (2.) fails to determine how a disability affects the student's academic and educational progress, (3.) did not indicate what services would be needed to adequately address the student's needs (Breiger, Bishop & Benjamin, 2014). IEEs must be conducted with no cost to parents. School teams are obliged to consider the results of IEEs when contemplating eligibility for special education services. See Zirkel (2021) for additional details.

Individuals with Disabilities Education Act (IDEA)

IDEA is the vast federal special education law that includes detailed definitions and rules. Among its chief purposes is to assure a free appropriate public education (FAPE) to any student who qualifies for special education and related services.

Among the groups afforded services are:

- Infants and toddlers (under three years of age) with developmental delays in:
 1. cognitive development
 2. physical development
 3. communication development
 4. social or emotional development
 5. adaptive development

Also included are those with diagnoses with a high probability of developmental delay (e.g., Down syndrome).

- Children 3 through 9 years with developmental delays. Virtually the same areas of delay mentioned immediately above apply. However, generic “developmental delay” (or an equivalent term) can be used only in those states that choose to incorporate it in their special education definitions. That is, individual schools cannot opt to arbitrarily use this broad category without their state's prior specification.
- Children and youth 3 through 21 years meeting definitions in one or more of the following categories:
 1. autism
 2. deaf-blindness
 3. deafness
 4. emotional disturbance
 5. hearing impairment
 6. intellectual disability
 7. multiple disabilities
 8. orthopedic impairment
 9. other health impairment
 10. specific learning disability
 11. speech or language impairment
 12. traumatic brain injury
 13. visual impairment (including blindness)

Numerous additional provisos exist (e.g., the problem cannot be due to merely speaking another language or limited English proficiency or lack of appropriate instruction). See additional entries that include definitions for autism, intellectual disabilities, other health impairment, specific learning disability, speech or language impairment, and traumatic brain injury. These are categories with obvious implications for school psychologists.

Additional information for school psychologists, teachers and administrators is available from the following U.S. Department of Education link: <https://sites.ed.gov/idea/about-idea/>.

Further, supplemental information for parents is available from the following U.S. Department of Education link: <http://nichcy.org>

Incontinence (bladder or bowel; see enuresis or encopresis)

Inderal® (see anti-anxiety medications)

Informed consent

A concept important to school psychologists when a parent consents to have his/her minor child undergo an evaluation. Because minors are not deemed competent to provide consent for themselves, parents must do so for them. The “informed” portion of the concept means that the implications and potential consequences of consent are recognized by someone able to understand them (i.e., a minor’s parent or guardian). The precise wording regarding informed consent to evaluate under IDEA appears below.

*The public agency proposing to conduct an initial evaluation to determine if a child qualifies as a child with a disability under 34 CFR 300.8 must, after providing notice consistent with 34 CFR 300.503 and 300.504, obtain **informed consent**, consistent with 34 CFR 300.9, from the parent of the child before conducting the evaluation. 34 CFR 300.300(a)(1)(i)] [20 U.S.C. 1414(a)(1)(D)(i)(I)]*

Inpatient treatment (see psychiatric hospitalization)

Institute of Education Science (IES)

IES is the research section of the U.S. Department of Education. IES was created in 2002 with a mission “to provide rigorous evidence on which to ground education practice and policy.” Besides providing a logical structure that specifies various levels of educational research, IES funds projects and disseminates findings. Especially relevant to practicing school psychologists is the What Works Clearinghouse, which is housed within IES. As a repository for educational findings, the What Works Clearinghouse contains vast information about programs that might benefit the students with whom school psychologists work. The purpose is to set scientific standards and measure studies against these standards so that decision-makers have trustworthy information.

Research findings within the What Works Clearinghouse are organized by topics, of which the following are included:

- Literacy
- Mathematics
- Science
- Behavior
- Children and Youth with Disabilities
- English Language Learners
- Teacher Excellence
- Charter Schools

- Early Childhood (Pre-K)
- Kindergarten to 12th grade
- Path to graduation
- Post-secondary

Findings, which are easily accessed electronically, include numerous reports. For example, within the “Behavior” heading, one finds more than 20 intervention programs whose related research has been scrutinized and then summarized. In the same vein, reading research, found under the “Literacy” heading, includes eye-opening empirical findings about the efficacy of various popular programs.

The following link is for the What Works Clearinghouse: <https://ies.ed.gov/ncee/wwc/>. This link is for the broader IES site: <https://www2.ed.gov/about/offices/list/ies/index.html>

Intellectual disability (American Association of Intellectual and Developmental Disabilities) definition

A disability characterized by significant limitations in both intellectual functioning and in adaptive behavior, which covers many everyday social and practical skills. This disability originates before the age of 18.

See the following link of more details: <https://www.aaidd.org/intellectual-disability/definition>

Intellectual disability (federal) definition

Significantly subaverage general intellectual functioning, existing concurrently with deficits in adaptive behavior and manifested during the developmental period that adversely affects a child’s educational performance. Also see DSM-5, page 33, for a definition.

See the following link: <https://sites.ed.gov/idea/regs/b/a/300.8/c/6>

Intellectual disability, part score use-cautionary note

School psychologists typically approach intellectual disability (ID) diagnoses with cautiousness. This is both understandable and arguably prudent. In fact, many school psychologists seem to implicitly endorse the premise that it is far better to miss an instance of ID than to assign a diagnosis erroneously. Inadvertently, however, excessive cautiousness may prompt use of such stringent requirements for low IQ scores (a cornerstone of ID determination) that many bona fide cases of ID escape detection. Specifically, rather than requiring just a full scale IQ score below 70 some diagnosticians require that all part scores also fall below 70. For example, rather than a WISC-5 full scale IQ alone of 69, verbal comprehension, perceptual reasoning, working memory, and perceptual reasoning index scores would all need to be 69 or below. For statistical reasons (unexpected failure of scores to regress to the mean) setting multiple stringent cutoff standards means that full scale IQs would always be much lower than 69 for students identified with ID. In fact, in such a scenario a WISC-5 full scale IQ would always be 63 or lower. The net effect would be extremely low rates of identification of students having mild levels of ID. When hardline school psychologists impose universal part score requirements, they risk failing to follow proper professional practice and non-compliance with the IDEA stipulation that all students with disabilities are identified and provided needed services. This topic is covered in exquisite detail by Bergeron and Floyd (2013), article that arguably all school psychologists should read and contemplate.

Intermittent reinforcement (see schedules of reinforcement)

Internalizing-externalizing psychopathology

This dichotomy refers to the two broad types of emotional or behavior problems commonly found in childhood. Put simply, internalizing problems are personal in nature (internal to the individual) and may not be recognized by others. Affected children or teens, however, typically recognize their own distress, such as feelings of anxiety or depression. Of course, to some extent internalizing problems may be noticed by parents or teachers (e.g., the irritable and moody teen, the nail-biting child).

In contrast, externalizing emotional or behavior problems manifest primarily in overt actions (i.e., they are external in nature), which may or may not be accompanied by subjective upset. These actions often precipitate interpersonal conflict, especially with caregivers or teachers. Examples are overt noncompliance and opposition, conduct problems, or antisocial actions.

This simple internalizing-externalizing distinction seems to make intuitive sense. What's more, it is often borne out by empirical studies that use statistical techniques, such as factor analysis, as evidence by statistics reported in most commonly used behavioral rating scales (Quay, 1965; Reising et al., 2013).

Interval recording

This refers to a structured behavioral observation technique in which an entire session of classroom observation (e.g., 10 minutes) is subdivided into briefer intervals (e.g., 30 20-second intervals). In general, observers then opt for one of two procedures for recording during each interval. One option is dubbed “partial interval” because if the behavior under question (e.g., out of seat) occurs at any time during an interval it is coded as present for that interval. Further, the behavior is coded as present during that interval regardless of how many discrete occurrences take place during that interval. A second option is dubbed “whole interval” because the behavior under question is coded as present only if it occurs from start to finish within an interval. Again, there is no effort to count each occurrence during the interval. There is also a third option, which involves recording a student's behavior (e.g., out of seat/not out of seat) at a single point during an interval, such as at the exact instant an interval starts (disregarding any occurrences before or after that instant). This is sometimes referred to as a “point” interval technique.

As a group, interval recording techniques can prove quite valuable for measuring behavior, especially for monitoring behavior change across time. This is true because subjective judgements (“the student seems to be out of her seat less often this week than last”) can be replaced by numerical values (e.g., the exact percentage of intervals out of seat). Moreover, interval techniques are well suited for those situations in which simple behavior frequency counts are impossible. Simply put, some types of behavior do not lend themselves to counting of each occurrence because there is no clear start and stop point that can enable counting (e.g., inattention).

For additional information, see the following link from the University of Kansas: http://www.specialconnections.ku.edu/?q=assessment/data_based_decision_making/teacher_tools/partial_interval_recording.

Interview techniques (see diagnostic interview procedures)

***Intuiv*® (see stimulants and other ADHD medications)**

***Invega* (see anti-psychotic medications)**

Inverse probability fallacy (see comorbidity)

Ipsative

Concerns intra-individual test score interpretation over, or in addition to, inter-individual score interpretation. When school psychologists use multi-part IQ tests (e.g., WISC-5) and search for relative strengths and weakness in score profiles they are engaging in ipsative interpretation. This practice is popular among school psychologists and commonly advocated in the manuals of cognitive tests. It seems logical that intra-individual score differences (the highs and lows of an individual student's scores) could reveal personal strengths and weaknesses. In turn, detected weaknesses might be either bolster via practice or circumvented during instruction. Strengths could be capitalized on instructionally (also see aptitude x treatment interaction). These practices, however, are controversial and has been the subject of intense scrutiny in research. Dissent is exemplified by the work of McDermott, Fantuzzo, and Glutting (1990), in what has become a classic article entitled, "Just say no to subtest analysis."

Ipsilateral

Ipsilateral refers to signs or symptoms expressed on the same side of the body where a brain lesion (or injury) exists. This is in contrast to the notion of contralateral (expressed on the other side of the body). Ipsilateral is a potentially important concept for school psychologists because there are some ipsilateral expressions of unilateral (one side only) brain problems. For example, injury to one of the cranial nerves originating in the brain stem gives rise to sensory or motor expressions on the same side of the body. A right side injury to the trigeminal nerve can cause facial problems on the same (the right) side of the face as one example. In contrast, most brain injuries give rise to problems on the opposite side of the body (i.e., contralateral expression). Also, most innervation of the body below the neck is contralateral (perhaps 85% of pathways), with just a few being ipsilateral. This means that injuries to one hemisphere of the cortex may result in some spared functions on the opposite side of body.

Jaundice (neonatal)

This refers to accumulation of bilirubin (a byproduct red blood cell breakdown) in the bloodstream of newborns. The condition is quite common in premature babies, somewhat common in newborns generally, and often viewed as inconsequential regarding health and subsequent development. However, an important distinction exists between

highly prevalent “physiological” neonatal jaundice and much rarer “pathological” neonatal jaundice. With pathological jaundice, bilirubin may reach levels sufficient to damage the central nervous system, a condition known as kernicterus. Pathological neonatal jaundice arises from considerations such as maternal-neonatal blood group incompatibility, infections in the bloodstream, or enzyme deficiencies. Blood transfusions might be required. However, for physiological jaundice neonatologists or pediatricians seeking to reduce bilirubin levels may place the neonate under blue-spectrum light. This practice allows bilirubin close to the skin’s surface to be broken down and excreted. Consequently, school psychologists sometimes see references to the use of “bili lights” or “phototherapy” in students’ records.

Despite the assumption of physiological neonatal jaundice’s benign status, a very large Danish study found a 67% increased risk of autism when neonates experienced elevated bilirubin, but this outcome was no longer evident if the mother had experienced prior pregnancies or if the baby was born outside of winter (i.e., not from October to March; Maimburg, Bech, Vaeth, Moller-Madsen, & Olsen, 2010). Others have critiqued this study’s methodology and suggested it promoted unnecessary alarm among families whose baby experienced jaundice (Newman & Croen, 2011).

See the following link from the CDC regarding neonatal jaundice <https://www.cdc.gov/ncbddd/jaundice/index.html>

Joint attention

Joint attention is an important developmental skill acquired by virtually all children without developmental disabilities, such as those with autism. The younger girl in this photo recognizes that the older girl has directed her gaze to something that is probably important, so she intuitively directs her gaze there also. Critically, without the ability to recognize that another “mind” is processing and attending to elements of the environment such adaptively-critical joint attention would not occur.



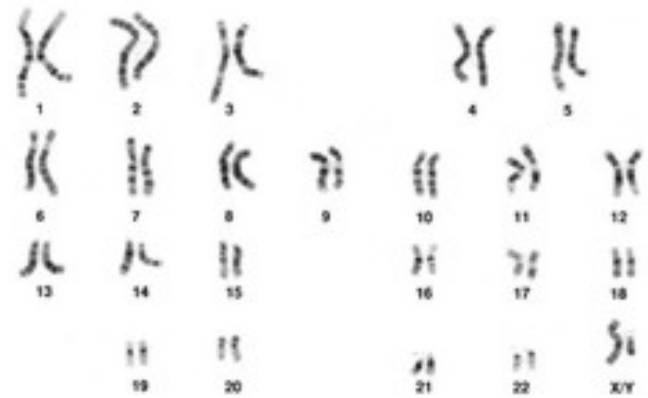
Photo by David L. Wodrich

6. K – L

Kapvay® (see stimulants and other ADHD medications)

Karyotyping

Karyotyping is an important medical diagnostic technique. It allows geneticists to visualize chromosomes so that their number can be counted. The same procedure permits searching for obvious anomalies on individual chromosomes. Most mistakes in the number of human chromosomes (i.e., departures from the expected 44 autosomes and 2 sex chromosomes) such as Down syndrome, Turner syndrome, and Klinefelter syndrome are associated with developmental and/or school learning problems. Gene mutations, such as appear in fragile X syndrome, are also important for school psychologists. The example of karyotyping seen here depicts a normal array of 46 chromosomes.



Normal Karyotype

Image provided by the National Institutes of Health

Klinefelter syndrome

Klinefelter syndrome is a genetic condition that appears only among males. It is caused by an extra X chromosome, making the individual's genotype 47XXY. Those affected with Klinefelter syndrome may lack secondary sex characteristics, an absence which becomes more apparent at adolescence. The syndrome is important for school psychologists because it may go undetected and because it is commonly associated with language impairment and reading difficulties (more than one-half may suffer a reading disability). Consequently, social and academic problems are common at school. For example, one study found that more than 80% of boys with Klinefelter syndrome confirm poor quality of life at school (Close et al., 2015).

Additional information is available from the following NIH link: <https://ghr.nlm.nih.gov/condition/klinefelter-syndrome>

The same is true of the American Association for Klinefelter Society Information and Support: <http://www.aaksis.org/>

Klonopin® (see anti-anxiety medications)

Larry P. v. Wilson Riles

This was an important court case for school psychologists pertaining to the use of IQ tests. This case eventuated in

the limited use of intelligence tests in California. The lawsuit arose from documented over-representation of Black children in programs for students with mild intellectual disability. IQ tests had been instrumental in identification of such students. In 1979 schools were finally enjoined from using such tests for Black students undergoing assessment for mild intellectual disability.

Laterality (of brain function)

This is the notion that the left and right hemispheres of the human brain subserve different functions. For example, the left hemisphere presumably is differentially important for linguistic tasks and processing highly familiar (routine) information (Pliszka, 2016). In contrast, the right hemisphere for many individuals is differentially important for visual-spatial tasks and for confronting novelty. Although these distinctions are often overly simplified, they sometimes are important in helping understand students with focal impairments, such as arise from epilepsy or from a localized traumatic injury.



Photo by Jesse Orrico, courtesy of Unsplash

Latuda® (see anti-psychotic medications)

Lead (effect on brain)

Many U.S. children are exposed to lead from the water they drink or from other immediate environmental sources (e.g., flakes of lead-based paint in their home). There is a risk that lead will accumulate in the brain thus engendering cognitive and behavioral problems. When practicing in areas where environmental exposure is a known risk, school psychologists might consider communicating with students' primary care physicians, individuals who might choose to order laboratory testing.

For details, see the following link from the American Academy of Pediatrics: <https://healthychildren.org/English/safety-prevention/all-around/Pages/Blood-Lead-Levels-in-Children-What-Parents-Need-to-Know.aspx>.

Additional facts are available from the National Institutes of Health: <https://www.nih.gov/news-events/nih-research-matters/low-levels-lead-linked-problems-children>

Least restrictive alternative

This is a critical notion for school psychologists. It concerns programming students with disabilities in the setting most similar to their counterparts without disabilities. Thus, to the extent possible, students should receive services in the educational "mainstream." This is exemplified by use of in-class programming and resource instruction rather than placement in stigmatizing self-contained special education classrooms or even more restrictive separate schools.

***Lexapro®* (see anti-depressant medications)**

Lexical

A term that refers to the words or vocabulary of a language. This is important for school psychologists because they often encounter children with lexical deficiencies that constrain classroom success generally and limit reading (especially reading comprehension) particularly.

LGBTQ (lesbian, gay, bisexual, transgender, and questioning) youth

LGBTQ represents an extremely diverse set of youth for whom particular social-emotional and adjustment issues are sometimes, but not always, present. For example, cumulatively this group is at risk for intolerance that may manifest in violence and bullying. Such students are also at risk for depression and substance abuse. School psychologists, consequently, may be an important resource for an individual student as well as a potential advocate for system-wide supports that encourage safe and supportive schools. A positive school climate may mitigate many of the risks cited above.

For more information see the following CDC link: <https://www.cdc.gov/lgbthealth/youth.htm>

***Lindamood-Bell®* approach (to reading and math)**

This approach includes an array of structured intervention programs to help students, especially those experiencing specific learning disabilities, dyslexia, or dyscalculia. Regarding reading decoding, the Lindamood Phoneme Sequence (LiPS) program, which is one aspect of the broader Lindamood-Bell approach, has been the subject of empirical research reported by the U.S. Department of Education's Institute of Education Sciences (IES).

The following link from IES provides facts: <https://ies.ed.gov/ncee/wwc/InterventionReport/279>.

More information is also available from the Lindamood-Bell organization itself: <http://lindamoodbell.com>.

Low birth weight

Newborns weighing less than 800 grams are at severe risk (~10% may not survive); those less than 500 grams are at even greater risk (40% may not survive). Obviously, low birth weight and prematurity are associated, and both increase the probability of health and developmental problems (see premature birth). Babies with preterm birth (especially extremely preterm birth, i.e., < 28 weeks) and low birth weight (especially extremely low birth weight, i.e., < 1000 grams) are particularly vulnerable to cognitive and academic problems during their school years (Hutchinson, de Luca, Doyle, Roberts, & Anderson, 2013).

A phenomenon referred to as “small for gestational age” is also relevant. As the name implies, these newborns are small without necessarily being premature. Problems with quality of the pregnancy may be indicated, as is jeopardy of subsequent health and developmental problems.

The following link from the CDC contains additional information: <https://www.cdc.gov/nchs/fastats/birthweight.htm>

Luvox® (see anti-depressant medications)

7. M – N

Macrocephaly

Macrocephaly refers to an unusually large head. This is relevant to school psychologists because it is sometimes associated with underline syndromes or conditions such as autism or neurofibromatosis type I.

Malleability

In psychology and education, the concept refers to the ability to be changed, especially with practice or experience. This is an important concept for school psychologists and educators because some characteristics are only minimally malleable. Research, especially that supported by the *Institute of Education Sciences* (part of the U.S. Department of Education), seeks to identify characteristics that are malleable and whose improvement might benefit students. Examples concern research on executive functions (where improvement might benefit a host of tangible behaviors) and spatial ability (where improvement might benefit mathematic performance).

Manifestation determination

According to the Individuals with Disabilities Education Act (IDEA), manifest determination concerns:

(i) In general. Except as provided in subparagraph (B), within 10 school days of any decision to change the placement of a child with a disability because of a violation of a code of student conduct, the local educational agency, the parent, and relevant members of the IEP Team (as determined by the parent and the local educational agency) shall review all relevant information in the student's file, including the child's IEP, any teacher observations, and any relevant information provided by the parents to determine–

(I) if the conduct in question was caused by, or had a direct and substantial relationship to, the child's disability; or

(II) if the conduct in question was the direct result of the local educational agency's failure to implement the IEP.

(ii) Manifestation. If the local educational agency, the parent, and relevant members of the IEP Team determine that either subclause (I) or (II) of clause (i) is applicable for the child, the conduct shall be determined to be a manifestation of the child's disability. 20 USC 1415 Sec. 615.

This means that manifest determination concerns a student receiving special education services who is also being considered for suspension, expulsion, or for an alternative placement due to behavior that extends past a 10-day limit. The key is for a judgment to be made about whether the behavior prompting the disciplinary action at issue is or is not attributable to (a manifestation of) his/her disability. Local educational agencies sometimes include school psychologists when these judgments are made. NASP provides information regarding best practices, but minimally the following would seem to require consideration: evaluation of the student, observations of the student, review of his/her IEP, and analysis of the type and appropriateness of services being provided.

Matthew effect (regarding reading)

A notion applied to reading development by Keith Stanovich in 1986. It posits that reading skill acquisition is influenced by cognitive capability and that well-developed reading skills themselves exert a reciprocal influence on cognitive capability. Consequently, those students who learn to read well have a greater chance of developing better cognitively and subsequently reading even better, whereas those who read poorly risk the opposite outcome. According to Stanovich, this mirrors the biblical expression from the book of Matthew that “the rich get richer and the poor get poorer.”

Mellaril® (see anti-psychotic medications)

Mendelian disorders

Named after Gregor Mendel, these refer to conditions in which a single gene, including mutations and alleles inherited from parents, is responsible for a syndrome. Conditions often follow the pattern of dominant and recessive characteristics originally outlined by Mendel in the 19th century. Examples important to school psychologists include sickle cell disorder, neurofibromatosis type I, and Williams syndrome. The importance of Mendelian disorders notwithstanding, many heritable psychological traits and disorders (e.g., intelligence, schizophrenia) are polygenetic, influenced by many genes, not just one. The National Institute of Health now houses a center concerning Mendelian conditions, although its role is primarily to fund research.

See the following link: www.genome.gov/27546192/

Metacognitive (strategies)

This term means literally “beyond” cognitive. Thus, metacognitive strategies are those that go beyond recalling and reasoning, for example, include planning, cognitive flexibility, self-monitoring, and thinking about how one thinks. These are important considerations because, for example, some bright students may have real-world functional problems owing to their limited metacognitive capabilities. The term shares similarities with the idea of executive function.

Metadate® (see stimulants and other ADHD medications)

Methylin® (see stimulants and other ADHD medications)

Microcephaly

Microcephaly refers to an unusually small head. This is relevant to school psychologists because it is sometimes associated with underlying syndromes or conditions.

Micrographia

This refers to extremely small handwriting. Micrographia presumably denotes a simplification of writing by students lacking adequate fine-motor and graphomotor control. The example below is a written response after a student has read a story. Note the use of miniaturized manuscript letters.

Describe the tree in the story. Who lives in the tree?

The tree is very tall.
A bird lives in the tree.

*Example of small
printing, perhaps
reflecting micrographia,
produced by an
elementary student*

Mindfulness

School psychologists are sometimes encouraged to apply mindfulness principles to help students on their campuses. Mindfulness is conceptualized as learning ways to self-regulate attention by focusing on certain stimuli but not others (without giving up inquisitiveness and acceptance as one does so). When students learn mindfulness techniques a host of benefits are hypothesized to follow. Thus, practices range from intensive interventions for targeted groups or individual students to school-wide development of mindfulness skills (see Felter, Doerner, Jones, Kaye, & Merrell, 2013).

Mnemonic devices

When rote material is to be learned, this technique can help by providing memory aids. Thus, mnemonic devices (techniques) are designed to facilitate acquisition and support retention. The trick is making associations between more easily-remembered aids and the target material to be remembered. This is commonly done by inventing meaning

(rhymes) or kinesthetic (movement) or a single acronym that prompts recall. Because mnemonic techniques invoke higher-level strategies to support lower-level tasks, they are considered “meta-cognitive” in nature.

For example, a fifth-grade student must learn the names of the names of the five Great Lakes. Rather than relying on rote memorization she uses the acronym HOMES. When needed, she merely recalls HOMES, which in turn, reminds her of the name of each associated lake. Obviously, remembering HOMES is simpler than remembering each lake individually.

H – Huron, **O** – Ontario, **M** – Michigan, **E** – Erie, **S** – Superior

Mood stabilizers and anti-convulsants (to treat social-emotional conditions)

This group of medications is principally used for symptoms of mania and/or depression seen in bipolar disorder. Such medications are also sometimes used to target explosiveness, aggression, or severe impulsiveness, especially with documented or suspected mood problems. Although it is obvious that anti-convulsants are also used to treat epilepsy, their use in the situations above does not imply that seizures are present or that the youngster has a diagnosis of epilepsy.

For more information see the following link from the National Institutes of Health: <https://www.nlm.nih.gov/health/topics/mental-health-medications/index.shtml>

Additional information is also available from a user-friendly site provided by Ohio Minds Matter: <http://ohiomindsmatter.org/about>

Trade name	Generic name	Sub-category	Onset of effect
<i>Depakote®</i>	valproic acid	anti-convulsant	Delayed
<i>Depakene®</i>	valproic acid	anti-convulsant	Delayed
<i>Eskalith®</i>	lithium carbonate	inorganic compound	Delayed
<i>Lamictal®</i>	lamotrigine	anti-convulsant	Delayed
<i>Tegretol®</i>	carbamazepine	anti-convulsant	Delayed
<i>Trileptal®</i>	oxcarbamazepine	anti-convulsant	Delayed

Mosaicism

There are a few genetic disorders that arise from an abnormal number of chromosomes. The most common example is Down syndrome, characterized by an extra #23 chromosome. This means that among individuals with Down syndrome there are a total of 47 chromosomes present rather than the standard 46 found in virtually all humans. Rarely an individual with Down syndrome has inconsistent numbers of chromosomes present among the cells found in their body. This represents mosaicism. Specifically, mosaicism in Down syndrome means that some, perhaps nearly all, cells have 47 chromosomes but some cells retain the normal 46 for individuals in this uncommon (mosaicism) subset. Not surprisingly, the presence of mosaicism means that any physical and cognitive impairments may be less distinct and less severe

than those associated with the standard disorder. In addition to Down syndrome, mosaicism appears some sex-linked disorders, such as Turner syndrome (a missing X chromosome) and Klinefelter syndrome (an extra Y chromosome).

MRI (magnetic resonance imaging)

MRI is a non-invasive medical procedure used to investigate possible disease or damage. Practically speaking, school psychologists reviewing case records may see mention of an MRI that has been performed to rule out brain lesions (e.g., when neurological signs or symptoms are present) or to assess potential structural changes that might be associated with a head injury. MRI uses strong magnetic current, not x-rays, to image distribution of high fat and water content areas. The three-dimensional images generated often provide a degree of detail superior to techniques using x-ray technology (e.g., CT [computed tomography] scan).

Multi-tiered Systems of Supports (MTSS)

MTSS concerns a broad, general framework for providing levels of school services and supports. Tier 1 concerns entire schools by creating a nurturing environment in which effective practices are provided to all students. Tier 2 concerns additional (or different) supports and services for fewer students. Students provided Tier 2 services might be, for example, those identified with early reading problems (in a RTI approach) or those with suggestions of behavioral problems (in a PBIS approach). Tier 3 concerns yet more intensive, specialized interventions or services provided to even fewer students. Tier 3 services, for example, might involve delivery of quite specific interventions for students with social skill deficits or intractable reading problems. Detailed information is available in the following source (Jimerson, Burns & VanDerHeyden, 2015).

Munchausen by Proxy (see factitious)

Mystery Motivator (see group contingency interventions)

***Nardil* (see anti-depressant medications)**

Narrowband scales (also see broadband scales)

In contrast to broadband scales, these scales cast a narrow net that concerns specific aspects of psychopathology. Narrowband scales are not used on every student being assessed. Rather they are selected for use based on a student's presenting problem or a school psychologist's emergent hypotheses about the nature of a student's difficulties. Examples of narrowband scales include those for childhood depression (e.g., Reynolds Childhood Depression Scale-Second Edition; Reynolds, 2010) or for ADHD (ADHD-5 Rating Scale; DuPaul, Power, Anastopoulos, & Reid, 2016). Also see broadband scales.

NASP (see National Association of School Psychologists)

National Assessment of Education Progress (NAEP)



Photo by Schnobrich, courtesy of Unsplash

As its name implies, NAEP is a nationwide testing program. To monitor the nation's progress on core academic skills among its children, the federal government routinely collects reading and math data for students from fourth to eighth grade (and occasionally 12th graders). This is sometimes referred to as the "Nation's Report Card."

Voluminous information is provided on the accompanying website that addresses proficiency levels differentiated by many demographic variables:

https://www.nationsreportcard.gov/reading_math_2015/#?grade=4

National Association of School Psychologists (NASP)

NASP is a professional organization devoted to the practice of school psychology. It concerns diverse aspects of school psychology training, scholarship, and professionalism. To accomplish its mission, NASP publishes a scholarly journal (the *School Psychology Review*) as well as a more practitioner-oriented newsletter (the *Communiqué*). It provides its own professional practice standards and ethics code that are specific to school psychology. Further, NASP accredits training programs in school psychology and offers a practice credential (i.e., "Nationally Certified School Psychologist," NCSP).

Some important NASP links are as follows:

- Home page: <http://www.nasponline.org/>
- Principles of Professional Ethics: <http://www.nasponline.org/standards-and-certification/professional-ethics>
- Membership: (<http://www.nasponline.org/membership-and-community/rates-and-categories>)

Nationally Certified School Psychologist (NCSP)

NCSP is a practice credential offered by the National Association of School Psychologists. Possession of this credential denotes a level of preparation and competence. NCSP designation may also enable streamlined credentialing in various states and expedite certification portability from one jurisdiction (state) to another. School psychologists who hold this credential often place "NCSP" after their name and degree when they sign documents.

For more information see the following link: <http://www.nasponline.org/standards-and-certification/national-certification>

Navane® (see anti-psychotic medications)

NCSP (see Nationally Certified School Psychologist)

Negative predictive value (see diagnostic utility statistics)

Negative reinforcement

Often confused with punishment, negative reinforcement involves increasing the frequency of a behavior by removal of an aversive stimulus. Examples are a student sensing anxiety on the playground who leaves for the nurse's office. Her reduced anxiety may negatively reinforce avoidance and strengthen its subsequent occurrence in similar situations. Negative reinforcement is involved in many unwanted behaviors for which teachers and parents consult school psychologists.

Neonatal Intensive Care Unit (NICU)

As its name implies, this is an intensive hospital unit where infants born with prematurity or high risk may be placed after birth. Most stay a few days, but some stay weeks or even months. Extensive, high-technology monitoring and growing treatment options executed by neonatologists and neonatal staff members have enabled enormous advances in understanding the causes of neonatal death and subsequent developmental problems among survivors.

Neurofeedback (see EEG)

Neurofibromatosis, type I (NF1)

NF1 is a genetic disorder characterized by lesions of the skin and brain (like tuberous sclerosis, this is a neurocutaneous disorder). Although it is considered autosomal dominant in nature, which means an affected parent has a 50% risk of passing on the condition to his/her offspring, about one-half of cases result from a spontaneous mutation. NF1 is important to school psychologists because it appears to be disproportionately associated with specific learning disabilities, ADHD, and (rarely) intellectual disability.

Additional information is available at the following NIH link:

<https://www.ninds.nih.gov/Disorders/Patient-Caregiver-Education/Fact-Sheets/Neurofibromatosis-Fact-Sheet>

Neurontin® (see anti-anxiety medications)

Neurotransmitter

Neurotransmitters are chemical messengers that operate at a synapse (the spot where nerve cells [neurons] meet). Neurotransmitters served to facilitate or inhibit electrical activity conveyed among neurons. Neurotransmitters, such as dopamine and serotonin, play crucial roles in psychological and behavioral functioning. Consequently, many psychiatric and neurological medications alter the balance of and availability of neurotransmitters. For example, stimulant medications like Ritalin® transiently increases the availability of dopamine and norepinephrine, which may account for their role in diminishing symptoms of impulsiveness and inattention.

NICU (see neonatal intensive care unit)

Nomogram (see Bayesian [probability] nomogram)

Nomothetic

Nomothetic research strategies rely on study of groups of people and, often group level statistical analysis. Similarly, this approach is concerned with interindividual variation. More important regarding practice, a nomothetic assessment approach seeks information about a specific child that so that he/she can be understood by what is already known about large numbers of children. Standardized assessment tools are inherently nomothetic. This approach can be contrasted, regarding both research and practice, with the idiographic approach.

Nonverbal learning disability (NLD)

NLD represents a relatively homogeneous set of signs and symptoms rather than a specific diagnosis. First identified by Byron Rourke (1989), NLD is presumed to arise from right hemisphere dysfunction. NLD is somewhat controversial and it does not appear in DSM-5. Nonetheless, it is argued that children with the condition have difficulty on psychometric tasks that require visual-spatial processing while enjoying preserved (sometimes advanced) rote linguistic capability. Consequently, WISC-5 test patterns may appear as low Perceptual Reasoning Index scores coupled with much higher Verbal Reasoning Index scores. Additionally, visual-perceptual deficits are often apparent on design copying tasks as are deficits in social skills, such as lack of appreciation of social cues. Motor clumsiness and tactile-perceptual problems may exist. Coping with novel situations is said to be an additional hallmark of the condition. Academically, problems are most apparent in computational arithmetic and later in reading comprehension. NLD case studies are available in Wodrich and Schmitt (2008).

8. O – P

Omega squared ω^2 (see effect size)

Operant (behavior)

This term concerns a class of behaviors controlled by consequences. Operants are typically thought of as volitional or semi-volitional, as opposed to classical conditioned behaviors (that are merely reflexive). Operants develop and strengthen because they are reinforced. For example, “Nick developed the operant behavior of complementing his classmates because he often received praise and attention when he did so.”

Orthography (orthographic)

Orthography concerns the symbols in written language. Thus, orthography is important regarding the visual aspects of reading and, especially, spelling. In school psychology, orthographic processing problems are often contrasted with sound-based or phonological processing problems as one potential cause of reading and spelling problems. This is particularly true regarding irregular words in English (e.g., “though”) that cannot be recognized or spelled by relying on by phonetics. In other words, orthographic processing enables visual word-form representations to be stored.

Orton-Gillingham approach (to reading instruction)

This instructional approach was devised in the 1940s. It represents one of the first “clinical” reading programs, that is a program designed expressly for students who have failed with regular instructional techniques. (Many students in the group for whom the Orton-Gillingham approach was initially developed would now be given specific learning disability or dyslexia designations). The program is important because it exemplifies a detailed and structured remedial reading program and because it is multi-sensory in nature (e.g., uses visual-auditory-kinesthetic elements). Aspects of the Orton-Gillingham approach have resurfaced in contemporary instructional programs, some of which have been subjected to efficacy studies. Nonetheless, the Orton-Gillingham approach itself has not been well studied.

The following link from the Florida Center on Reading Research may be helpful. http://www3.barringtonschools.org/nayatt/Documents/Response%20to%20Intervention-Orton_Gillingham_Approach.pdf

Other Health Impairment (federal) definition (OHI)

According to IDEA, OHI concerns students *having limited strength, vitality, or alertness, including a heightened alertness to environmental stimuli, that results in limited alertness with respect to the educational environment, that (1) is due to chronic or acute health problems such as asthma, attention deficit disorder or attention deficit hyperactivity disorder, diabetes, epilepsy, a heart condition, hemophilia, lead poisoning, leukemia, nephritis, rheumatic fever, sickle cell anemia, and Tourette syndrome; and (2.) adversely affects a child’s educational performance.*

Also see the following link: <https://sites.ed.gov/idea/regs/b/a/300.8/c>

Overlearning

Overlearning refers to an instructional strategy during which practice continues past the point of initial mastery. For example, a third-grade student who is learning addition facts (e.g., $2 + 4$; $3 + 4$) eventually reaches 100% correct on a set of problems with sums less than 10. This might have been accomplished, for example, after 12 practice trials. This student, however, might continue to practice such addition facts for 10 trials after initial mastery. She could then be said to have overlearned these facts. Overlearning appears to help skills reach a level of automaticity. The following link may be helpful:

https://www.unh.edu/sites/default/files/departments/center_for_excellence_and_innovation_in_teaching_learning/overlearning.pdf

Palilalia

This behavioral phenomenon refers to repeating one's own words or sounds in recurrent and odd ways. Palilalia is important for school psychologists to recognize because it sometimes occurs among individuals with autism but rarely among those without autism.

Pamelor® (see anti-depressant medications)

PANDAS (Pediatric Autoimmune Neuropsychiatric Disorders Associated with Strep)

This is a rare neurological condition that arises acutely following a strep infection. It appears that some children develop antibodies to strep and that these antibodies in turn react negatively with parts of the brain. This can result in symptoms that mimic tics and Tourette disorder. The condition may also present with *de novo* symptoms of OCD, ADHD, affective disorders, and anxiety evident in between 32% and 80% of children with PANDAS (Swedo et al., 1998). It appears that symptoms dissipate over time. Understandably, any presentation like this can prove confusing to a student, her teacher and her parents. Consequently, most school psychologists would consult with their school nurse or speak with the student's primary care physician in the rare instances in which they encounter novel symptoms such as these.

The following link is available from National Institutes of Health: <https://www.nimh.nih.gov/health/publications/pandas/index.shtml>

Parnate® (see anti-depressant medications)

Parsimony (law of)

The concept that explanations relying on fewer principles are preferable to those relying on more, all other things being equal. This seems especially relevant to school psychologists involved in assessment and test interpretation. For example, it is argued that interpretation of many tests, and especially their individual index and subtest scores, may lack scientific foundation and violate the Law of Parsimony. Specifically, full scale IQ may predict academic achievement as well, or nearly as well, as several scores arising from a complex battery (see, for example, McGill & Busse, 2015, regarding interpretation of the Woodcock-Johnson Tests of Cognitive Abilities; Shrank, Mather & McGrew, 2014).

PASS (Planning, Attention, Simultaneous, Successive) theory

PASS is a theory of cognitive processing that originally sprang from first-hand study of the brain by Russian A. R. Luria. His work, especially concerning soldiers afflicted with focal brain injuries, helped to solidify the recognition that many important brain functions are modularized. That is, specific functions are, at least partially, localized. Humans are able to execute complex tasks when modularized functions come together (via interconnections in the brain).

Inter-disciplinary work in North America and elsewhere cutting across fields of cognitive psychology, clinical neuropsychology and psychometrics helped formalize the theory popularly known as PASS (Naglieri, 1997). When applied to the concept of intelligence, the PASS theory takes the following form. Intelligence can be conceptualized as comprised of three aspects. The first of these is **attention**, which is essential to provide sufficient focus for the accomplishment of cognitive tasks. A second of these is information processing, which is broadly conceptualized as processing information **simultaneously** (where all elements are available at once) and **successively** (where all elements are not entirely available during the task and where task elements are processed in sequential order). A third element is **planning**, which includes aspects like purposeful control of attention, use of information processes, and self-regulation to achieve goals. The PASS model arguably provides a rich and complex conception of intelligence.

As is true of the work of Luria generally, the PASS theory particularly can help school psychologists when they consider students in the context of their classroom and how their development fits with classroom demands. More importantly, Naglieri, Das and Goldstein (2014) have developed a psychometric assessment tool that rests on the PASS theory, entitled the Cognitive Assessment System-2 (CAS-2). The original CAS (and now the CAS-2) affords profiles that can be used to plan instructional activities, including some that are designed to boost weaknesses consistent with the broader PASS model (see Iseman & Naglieri, 2011).

Paxil® (see anti-depressant medications)

Pedagogy

The science and art of teaching.

Pediatric Autoimmune Neuropsychiatric Disorders Associated with Strep (see PANDAS)

Peer tutoring (such as for students with ADHD)

This involves individual or small group work with a classmate or older student who tutors. Whether completing work in class or practicing academic skills outside of class, many students with ADHD (and related problems) suffer from poor organization and weak task persistence. Thus, it makes sense that pairing such students with a more responsible and better-focused classmate may ameliorate some classroom difficulties. This is the idea behind peer tutoring. It has become a popular practice, with some research support regarding both improved classroom behavior and enhanced academic performance.

The following link from Duke University provides additional detail https://childandfamilypolicy.duke.edu/pdfs/schoolresearch/2012_PolicyBriefs/Nguyen_Policy_Brief.pdf.



Photo by Jeswin Thomas, courtesy of Unsplash

Permanent products

As the name implies, this refers to tangible artifacts arising from a student's classwork or her performance. The most obvious examples are completed worksheets or homework logs used as evidence in a behavior intervention plan. For school psychologists conducting assessments, however, permanent products are also an important source of background information (review of work samples from prior academic years) as well as indications of current academic skill levels. Moreover, it is sometimes argued that these products have excellent content and ecological validity because they match precisely the concerns expressed by teachers or parents when a student is struggling academically.

For additional information, see the following link from the University of Kansas: http://www.specialconnections.ku.edu/?q=assessment/data_based_decision_making/teacher_tools/permanent_product_measurement

Phonemic awareness

According to the National Reading Panel, phonemic awareness is “the knowledge that spoken words can be broken apart into smaller segments of sound known as phonemes.”

Pica

Pica refers to the eating of nonnutritive substances. See DSM-5 page 329 for more details.

Polygenetic inheritance

A term from genetics that denotes traits or conditions whose appearance arise from the influence of many, not just one, gene. Common examples of characteristics with polygenetic influences are height and IQ. Also see entry on Mendelian disorders.

Positive Behavior Interventions and Supports (PBIS)

PBIS refers to school-wide programs designed to offer tiers of supports. As such PBIS is one example of Multi-Tiered Systems of Supports (MTSS). In PBIS, Tier 1 concerns campus wide elements such as those designed to improve school climate, avoid punitive measures when behavior problems arise, and afford teachers maximum time for instruction. Tier 2 concerns more tailored or more intensive interventions for students with recurrent problems or those identified via screening (e.g., students at risk because of exposure to trauma or who have been bullied). This tier concerns fewer students. Tier 3 offers the most intensive interventions and is reserved for far fewer students (e.g., those with documented depression). Especially at Tier 2 and Tier 3, interventions are selected that have gained evidence of effectiveness in empirical studies.

Positive and negative predictive value (see diagnostic utility statistics)

Positive reinforcement

Positive reinforcement is the phenomenon of strengthening a particular behavior by adding something after its occurrence. Behaviorists studying positive reinforcement in the laboratory can quantify changes in behavior (e.g., a rat pressing a lever) by the addition of something (e.g., food following lever presses). In schools, positive reinforcement might be exemplified by a class clown making silly noises promptly followed by attention from classmates. These classmates' actions might positively reinforce (and make more probable) silly noisemaking.

Critically, positive reinforcement is defined by its effect on behavior. Post-response additions that strengthen behavior are positive reinforcers and those that fail to do so are not. This means that the concept of positive reinforcement is often misunderstood. For example, consider the following statement, "Despite the use of every positive reinforcement I could find, I have been unable to change Maria's behavior." Positive reinforcement is defined by increases in target behavior, not mere intentions to do so.

Many variations of positive reinforcement exist, and school psychologists benefit from knowing about their various classroom applications, such as in behavioral contracts and token economies.

See the following link for additional information on behavioral contracts:<http://www.freeprintablebehaviorcharts.com/behavior%20contracts%20pdf/school%20attendance%20contract.pdf>.

This link concerns token economies: <http://165.139.150.129/intervention/Token.pdf>.

Positive symptoms/negative symptoms (of psychiatric or neurological disorders)

Positive symptoms refer to the appearance of symptoms (or signs) not evident before onset of an illness or condition (such as psychiatric or neurological conditions). By contrast, negative symptoms refer to the loss of functioning following the onset of an illness or condition. A classic example is found in schizophrenia. With onset of the disorder, some individuals lose previous functions (e.g., experience reduced emotional expression) and/or they develop new symptoms (e.g., onset of hallucinations). The former exemplify negative symptoms, the latter positive symptoms. Parallel examples sometimes manifest in students with traumatic brain injury (TBI). Loss of previous memory functions represent TBI-related negative symptoms, whereas the appearance of *de novo* impulsiveness constitutes positive symptomatology.

Posttraumatic stress disorder (PTSD)

PTSD is a disorder characterized by emergent symptoms (e.g., emotional blunting, flash backs, anxiety) following a severely traumatic event. Critically for school psychologists, PTSD exists in youth at rates greater than often anticipated (also see trauma). See DSM-5, page 271.

For additional information also see the National Institute of Health link: <https://www.nimh.nih.gov/health/topics/post-traumatic-stress-disorder-ptsd/index.shtml>

Prader-Willi syndrome (PWS)

PWS is a genetic condition most often due to a microdeletion in a portion of chromosome #15 (more rarely due to inheriting two copies of chromosome #15 from mother or rearrangement of genetic material on chromosome #15). Strangely, when the deletion occurs in mother's egg Angelman syndrome arises, whereas if the deletion occurs in father's sperm PWS arises. It is important for school psychologists to recognize because of the array of developmental and behavioral problems typically associated with PWS. These include developmental delay, with mean full scale IQs in various studies ranging from 44.5 to 62.3 (Whittington & Holland, 2017). These studies also found large IQ score ranges. Also commonly reported are relative weaknesses in math, reading comprehension, and expressive language. One of the most critical aspects of the syndrome is hyperphagia (uncontrolled eating). Voracious eating, sometimes including inappropriate food consumption (e.g., raw chicken) or pica, forces families to lock and secure food at home (McAllister, Whittington, & Holland, 2011). Psychiatric diagnoses are widely reported. One study of adults with PWS, for example, found high rates of mood disorders, including psychotic features, depending on the particular anomaly on chromosome #15 (Soni et al., 2007).

Additional information is available from the following NIH link: ghr.nlm.nih.gov/condition/prader-will-syndrome#genes.

The Prader-Willi Syndrome Association also provide information: www.pwsausa.org/

Pragmatic language

Pragmatic language concerns the social aspects of language, such as language used to form and maintain interpersonal relationships. Children with disorders of pragmatic language typically fail to modify their communication style to match the social situations in which they find themselves. They often lack understanding of the implicit rules that underlie

conversation (e.g, turn taking). Styles such as these may be associated with a condition now listed in DSM-5 “social (pragmatic) communication disorder” (see DSM-5, page 47). Pragmatic language problems also exist in children with autism spectrum disorder (see DSM-5, page 50).

Also, see the following link from the American Speech and Hearing Association <https://www.asha.org/public/speech/development/Social-Communication/>.

Praxis®

An array of tests for professional educators designed to verify the presence of knowledge and skills. This includes a Praxis test specific to school psychology that is sometimes used by training programs and professional organizations (e.g., NASP).

See the following link from the Educational Testing Service: <https://www.ets.org/praxis/nasp/overview>

Premack principle (for finding positive reinforcers)

This principle is named after the psychologist David Premack. It is not uncommon for school psychologists to have trouble finding viable reinforcers when they devise behavior intervention plans for students. Relatedly, school psychologists might hear statements like these when consulting with a teacher: (1.) “I keep using positive reinforcers, but they have no effect.” (2.) “This student is motivated by absolutely nothing.” Statement #1 is illogical because a positive reinforcer is defined by its ability to actually increase the frequency of a behavior (i.e., it must work to be called a positive reinforcer). Statement #2 turns out to be more problematic.

The Premack principle can often help. The notion is predicated on the inference that participating in certain behaviors is itself reinforcing. If this is so, “high frequency behaviors” can be used as reinforcers to boost target behaviors that are at low frequency. It is no surprise that when teachers consult with school psychologists that they are in fact mostly concerned about “low frequency behaviors” (e.g., complimenting peers, finishing seatwork) that they hope to turn into high frequency behaviors.

To find a high frequency behavior, school psychologists either carefully observe the student in the natural environment and/or conduct a detailed teacher interview about the student’s actions. As an example, a student may be observed to repeatedly retrieve markers from her desk and commence drawing whenever possible, or she may frequently attempt to engage Emily, a classmate, in conversation during class or recess. If this student’s problem is “low frequency” completion of math worksheets, then a behavioral contingency becomes apparent. Her high frequency behavior is a candidate reinforcer in this contingent arrangement. That is, access to Emily or access to markers (both high frequency) might be made contingent on greater math worksheet completion. The Premack principle, thus, is a tool when no obvious reinforcers exist.

Premature birth

Full term is considered 40 weeks of gestational age, whereas babies less than 37 weeks are considered premature. The shorter the gestational age (i.e., the more premature) the greater the risk of complications, which are listed below. Complications #3-6 are especially important for school psychologists.

1. Initial breathing

2. Early feeding
3. Hearing
4. Vision
5. Developmental and cognitive problems
6. Cerebral palsy

Preterm birth (especially extremely preterm birth, i.e., < 28 weeks) and low birth weight (especially extremely low birth weight, i.e., < 1000 grams) are associated with marked risk of cognitive and academic problems when these babies reach school age (Hutchinson, de Luca, Doyle, Roberts, & Anderson, 2013).

Premorbid

Premorbid refers to an individual's status (e.g., regarding IQ, adaptive skills, peer relations) before onset of an illness. For school psychologists, this often concerns a student's functional levels before either a psychiatric condition (e.g., before onset of schizophrenia) or a neurological condition (e.g., before a traumatic brain injury, before starting chemotherapy and radiation treatment for cancer).

Primary reinforcer

A positive reinforcer, such as food, that does not require a history of conditioning to acquire its potency. Most primary reinforcers are biological in nature. In general, primary reinforcers are only used under special circumstances. This might include instances in which other reinforcers (i.e., secondary reinforcers) prove unavailable or are shown to be ineffective. For example, a preschooler with autism might participate in a program designed to increase her eye contact with small quantities of fruit juice used as a primary reinforcer. This might be acceptable if praise and encouragement fail to work.

***Pristiq®* (see anti-depressant medications)**

Procedural (implicit, non-declarative) memory

As contrasted with declarative memory, procedural memory is supported by distinct brain structures (i.e., outside the hippocampi and related structures). Procedural memory concerns processes mostly inaccessible to consciousness. They require practice (or exposure) before acquisition. Procedural memory concerns the following (Squire & Wixted, 2011):

- skills and habits
- simple forms of conditioning
- emotional learning
- perceptual priming
- habituation

Procedural memory is important for school psychologists to recognize because these capabilities may be preserved

when brain injuries affect other memory systems. For example, after a head injury a student may be unable to retain new memories effectively but can still execute highly practiced skills (e.g., writing, arithmetic computation). In contrast to long-term declarative memory and short-term working memory, procedural memory is assessed by few psychometric tests.

For more information, see the following link: <http://www.livescience.com/43595-procedural-memory.html>. Also see declarative (explicit) memory.

***Procentra®* (see stimulants and other ADHD medications)**

Prodrome

Prodrome refers to the early signs of a disorder. For example, in schizophrenia progressively shrinking interests and declining socialization may constitute a prodrome. A prodromal stage of a condition is often a harbinger of classical and severe symptoms, such as hallucinations or impaired reality testing in schizophrenia.

Prognosis

Refers to predicting outcomes or impending problems associated with a particular diagnosis. Commonly used in medicine, the notion of prognosis also has potential value in school psychology. This is particularly the case when it is linked with longitudinal research. For example, a group of Canadian researchers (Beitchman et al., 2001) followed young children with either speech or language problems (as well as controls) longitudinally for more than 14 years. Among boys, they discovered that language impairment, but not speech impairments alone, were associated with markedly elevated risk of later psychiatric problems. Results were less clear for girls (although, like boys, girls with language impairment encountered elevated risk of learning problems). Empirical information such as this might help guide allocation of limited treatment services. In this regard, taking steps to mitigate potential psychiatric problems among young boys with language impairments makes considerable sense, whereas the imperative to do so is much less compelling among those with speech impairments only. Without information about prognosis, such planning would be difficult or perhaps even impossible.

Projective techniques

Projective techniques represent an extremely diverse set of assessment procedures that involve open-ended responses from youth and (generally) qualitative rather than quantitative scoring by psychologists. All of these techniques rest on the projective hypothesis. This hypothesis implies individuals “project” their own feelings, thoughts, needs, and attitudes when presented with ambiguous stimuli (e.g., inkblots) or open-ended probes (make up a story about the people in this [equivocal] picture). Historically, the notion of projection relates to classical defense mechanisms (comparable to other defense mechanisms such as denial or rationalization) and thus is inherently tied to Freudian theory and to the notion of the unconscious. Accordingly, this entire set of techniques has encountered declining interest as Freudian psychology’s influence has waned. Still, practicing school psychologists sometimes themselves use projective techniques. Other school psychologists may see clinic-based reports in which practitioners used inkblot techniques (e.g., Rorschach), story techniques (e.g., Thematic Apperception Test, Roberts Apperception Test), sentence completion techniques (e.g., Rotter

Incomplete Sentence Blank) and drawing techniques (e.g., Draw-a-Person, House-Tree-Person, Kinetic Family Drawing, Kinetic School Drawing).

***Prolixin®* (see anti-psychotic medications)**

Prosody

Prosody concerns an aspect of language that relates to intonation, stress, and inflection such that these elements correspond to the context and intent of communication. Children with social (pragmatic) communication disorder (see DSM-5 page 47) and autism spectrum disorder (see DSM-5 page 50) may have little ability to impart prosody in their speech. Prosody, however, is sometimes seen among children with neither of these conditions, however.

***Prozac®* (see anti-depressant medications)**

Psychiatric hospitalization

This represents the most intensive treatment option for children and adolescents with acutely presenting (or especially severe) psychiatric symptoms. So-called “inpatient treatment” is typically restricted to use for stabilization, especially when youngsters represent a threat to self or others. Sometimes, however, inpatient care is used for extremely challenging diagnostic cases or when psychiatric treatment warrants close medical supervision (e.g., there are co-existing psychiatric and medical problems). Specially designated programs for adolescents and those for pre-adolescents typically afford extremely rich staffing ratios consisting of behavioral technicians, educators, nurses, and psychiatrists (often, but not always, child and adolescent psychiatry specialists rather than general psychiatrists) would serve as the attending physician. Because of their restrictive nature and expense, contemporary psychiatric hospitalizations are typified by brief stays and rapid formulation of post-hospital treatment plans.

The following link from the American Academy of Child and Adolescent Psychiatry may prove informative: http://www.aacap.org/AACAP/Families_and_Youth/Facts_for_Families/FFF-Guide/11-Questions-To-Ask-Before-Psychiatric-Hospitalization-Of-Your-Child-Or-Adolescent-032.aspx

Psychodynamic approach

An approach consistent with the theorization of Sigmund Freud, thus emphasizing the importance of childhood experiences, internal drives and conflicts, and the unconscious.

Punishment

In applied behavior analysis, punishment has a specific meaning. It refers to a behavioral technique that decreases the

rate of behavior based on the introduction of something aversive. Like many other behavioral concepts, punishment is determined by its effect on behavior (not merely the intention of behavioral programmers). In general, most behavioral experts emphasize strengthening positive behaviors rather than reducing unwanted behaviors via procedures such as punishment or timeout. Moreover, there are ethical and legal constraints on clinical application of punishment with youth plus restraints on its use in educational settings.

Pygmalion effect (see Rosenthal effect)

9. Q – R

Qelbree® (see stimulants and other ADHD medications)

R² (see effect size)

Rapid automatized naming (RAN)

RAN refers to a variety of tasks, all of which require a respondent to name objects or symbols as rapidly as possible. RAN procedures are frequently used in research and in school-based practice for their ability to predict skill acquisition in reading. Because some struggling readers express problems with automaticity and speed (but perhaps with few other correlates of poor reading) RAN-like tests may add sensitivity to the assessment process. This may be true because like reading RAN tasks require visual recognition linked with nearly simultaneous oral output. Popular measures of phonological processing, such as the Comprehensive Test of Phonological Processing (Wagner, Torgeson, Rashotte & Pearson, 2013), include RAN tasks.

Reading Recovery®

This is an intensive program for first graders who struggle to acquire skills via typical reading instruction. The program, which emphasizes whole language over phonics, lasts 12 to 20 weeks of 30 minute-per-day instruction delivered individually by a teacher specially-trained in Reading Recovery methodology. The obvious expense of such an intensive intervention is one barrier to its wide-spread school use. On the other hand, the program has been studied extensively with positive results; a meta-analysis by D'Agostino and Harmey (2016) concluded that the program possessed considerable evidence of efficacy.

The following link from the Reading Recovery Council of North America provides additional information: <https://readingrecovery.org/reading-recovery/teaching-children/basic-facts/>

Rebound (from stimulant medication)

In the context of treatment with stimulant medications, rebound refers to a temporary exaggeration of symptoms among some children with ADHD as medications (e.g., methylphenidate) are metabolized (“washed out”) of their blood stream. As a result, irritability, frustration intolerance, and hyperactivity may be transiently worsened. This interval may last from for 30 minutes.

Recurrence risk

Recurrence risk quantifies the chance a given condition (e.g., Down syndrome) will recur in a subsequent pregnancy. This proves practically important because many single gene disorders, as well as those caused by polygenetic factors, recur at greater than chance levels in subsequent pregnancies. For example, a large epidemiological study showed that autism spectrum disorder (ASD) recurred among more than 10% of males when there was a brother with ASD (Palmer et al., 2017). This is important for school psychologists because family history sometimes helps to create hypotheses about the nature of a student's problem (or and at other times adds weight to already-existing hypotheses). In addition, a positive family history of genetic or developmental problems may signal a need to alert families and health care providers. With additional information, some families seek genetic counseling.

Regression to the mean

The statistical expression of the fact that when a child has one extreme test score that a second for that child is likely to be found closer to the mean. For school psychologists, this has important implications for, among other things, examining several test scores on the same individual (e.g., IQ and achievement test scores).

Related services

These are services guaranteed to eligible students under a portion of IDEA that calls for special education and “related services.” Such services are considered for each student during IEP meetings and subsequently offered as needed once special education eligibility is established. The exact words from IDEA follow:

*“Related services means transportation and such developmental, corrective, and other supportive services as are required to assist a child with a disability to benefit from special education, and includes speech-language pathology and audiology services, interpreting services, psychological services, physical and occupational therapy, recreation, including therapeutic recreation, early identification and assessment of disabilities in children, counseling services, including rehabilitation counseling, orientation and mobility services, and medical services for diagnostic or evaluation purposes. Related services also include school health services and school nurse services, social work services in schools, and parent counseling and training.”*300.34(a)

For school psychologists, the following information regarding “counseling” seems especially relevant:

“Counseling services means services provided by qualified social workers, psychologists, guidance counselors, or other qualified personnel.” 300.34 (c) (2)

The professional providing the related services may need to participate as a member when an IEP team convenes. That is, he/she may be the relevant party for IEP meetings, rather than a special education teacher only serving in that capacity. For example, if the only service provided a student is speech therapy, then it is logical that a speech-language pathologist rather than a special education teacher participates.

The following link from the U.S. Department of Education provides details: <https://sites.ed.gov/idea/regs/b/a/300.34>

Relative risk

This was originally used by epidemiologists concerning physical illness. It now also finds applications in psychology. Relative risk concerns calculating a ratio comparing the prevalence of an outcome in an exposed group and the prevalence of the same outcome in an unexposed group. For example, assume that being bitten by a certain strain of mosquito was associated with the development of fever. If the prevalence of fever were 10% in those suffering the bite and 0.50% in those not suffering a bite, then a ratio of the two could be calculated $(.10/.005) = 20$. This might be interpreted as the relative risk associated with exposure; having exposure makes someone 20 times more likely to develop fever.

In psychology, a ratio just like this can be used to characterize risk associated with a particular prior diagnosis. For example, assume that children with a specific learning disability (SLD) have co-existing ADHD approximately 35% of the time. However, ADHD also occurs in children who do not have SLD. Let's assume that rate (i.e., among children in general or the "population prevalence rate") is about 6%. Using the logic indicated above, these two values allow for calculation of an increased risk (relative risk) of ADHD associated with the presence of SLD. The calculation is as follows: $.35/.06 = 5.8$. As suggested by the paragraph above, the interpretation of this value is that children who have an existing diagnosis of SLD have a 5.8 times elevated risk of having ADHD compared to counterpart children with no SLD diagnosis. Relative risk can be applied to all manner of information that has been found in the empirical literature to predict risk (e.g., a positive family history, a history of trauma, a history of physical illness).

It is probably obvious that application of relative risk has potential diagnostic value. Two children, one with SLD and one without SLD, have differing probability of having ADHD. If a diagnostician's task is to, for example, rule in or rule out ADHD then the information needed to confirm ADHD for one child is arguably different than that needed for another. Helping diagnosticians make progressive judgements about the presence of conditions as they gain additional information is the heart of Bayesian inference making (see Bayesian nomogram).

The statistically inclined might like the following link: https://academic.oup.com/ndt/article/32/suppl_2/ii13/3056571

Reliable change index (RCI)

This refers to a simple statistical technique used to determine if apparent pre-post score differences are genuine (non-chance). RCI can be important to school psychologists because it sometimes helps establish if a student-level intervention is actually working. This is done by administering a measure two (or more) times. For example, a student who reports extreme anxiety might complete a self-report anxiety scale before receiving an intervention (e.g., relaxation training) and again after the intervention concludes. Similarly, a baseline rating of ADHD symptoms might occur prior to and after use of a medication has commenced.

Detailed coverage, including guidance on calculation, is provided in the following link: https://ir.canterbury.ac.nz/bitstream/handle/10092/13399/12664317_Reliable%20Change%5ETutorial%5ENZPsS%5E2016.pdf?sequence=1

Resilience

A hypothetical variable that reflects each human's capability to respond to stress or trauma by springing back to prior levels of functioning. Well developed resistance to stress or lack of vulnerability to negative life events, is understandably considered a psychological strength.

Consider the following link from Harvard University:<https://developingchild.harvard.edu/science/key-concepts/resilience/>

Remeron® (see anti-depressant medications)

Response to Intervention (RTI)

RTI is a critically important general education initiative (also see entry for specific learning disability, where RTI represents a method for identifying students). RTI is a multi-level approach for providing increasingly intensive academic supports that faithfully corresponds to learners' needs. As such, RTI is sometimes considered to be just one example of the broader concept of "multi-tiered systems of supports" or MTSS. It involves universal screening and regular progress monitoring to place students at one of three levels regarding each academic skill area (e.g., reading, math, written expression):

- Tier 1 (core instruction)
- Tier 2 (group instruction)
- Tier 3 (intensive instruction, delivered to small groups or individual students)

Fewer and fewer students receive instruction at each of the tiers, and instruction at each higher tier is more specialized, more intensive, and provided for more minutes per week. Tier 3 often involves students who have been identified as meeting criteria for special education (e.g., SLD). The primary goal of RTI is to prevent academic problems from appearing and to remedy nascent problems in the educational mainstream (student's home classroom). A secondary goal is to provide data able to inform the referral process and assist in decision making about SLD services (Fletcher & Vaughn, 2009).

The following link from the RTI Action Network provides additional information: <http://www.rtinetwork.org/essential/tieredinstruction/tiered-instruction-and-intervention-rti-model>

Reversal (ABAB) design

In applied behavior analysis, a reversal design refers to a single-subject data analysis that involves two reversals. An ABAB design involves establishing a stable baseline condition (A), followed by an intervention (B), followed by another baseline, and then finally followed by return to the intervention. Consistent behavior changes co-occurring with phase changes (i.e., shifts from A to B and then again from B to A) provides researchers (and sometimes practicing school psychologists) evidence about the effect of their intervention.

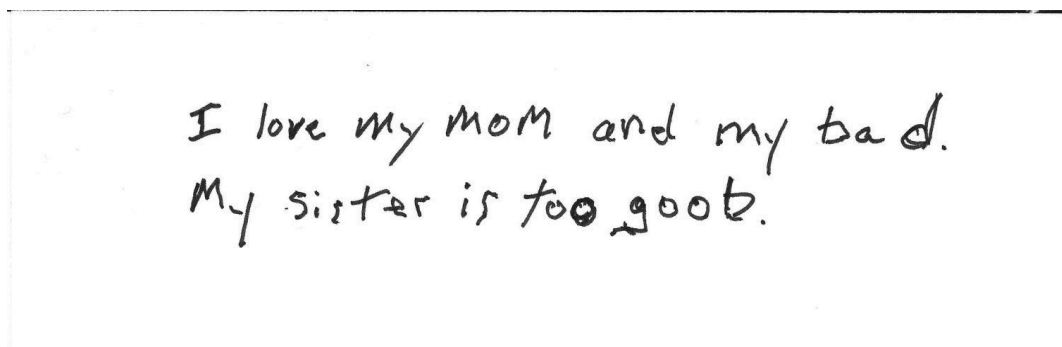
Because ABAB designs involve reversals (withdrawal of the intervention used in the first B phase) and then return of intervention (after the second A phase) it is often possible to infer if the intervention actually caused improvement in behavior. Although reversal designs help school psychologists to reach strong conclusions, in reality they are rarely used in school-based practice. Instead, simplified variations that might be thought of as AB designs probably typify real-life school psychology practice. A teacher, for example, may indicate that an inattentive student "seemed more attentive" when she was moved to the front of the room (i.e., the B condition seemed better than the A condition [note that in this scenario no data were actually collected]). The inference was that the seating move caused enhanced attention. Logically, however, other factors (many of them unknowable) may be responsible. The lessons may have become easier or previously unknown sleep problems may have resolved at almost the same time the seat move change was made.

School psychologists can help teachers and parents with whom they consult to think logically and gather information when important behavior changes are addressed. ABAB designs offer compelling logic. Considering them helps practitioners remember to be cautious when less meticulous data collection procedures are used.

See the following link for more details: <https://allpsych.com/research-methods/singlesubjectdesign/ababdesign/>

Reversal (of letters, words)

Reversals concern directional confusion in printed matter. A distinction is sometimes made between: (1.) static reversals and (2.) kinesthetic reversals. The former concerns a receptive error in which “d” might be called “b” or “was” is read a “saw.” In contrast, the latter concerns when a “p” is written as a “q.” In other words, static reversals concern receptive errors, kinesthetic expressive errors. Note that reversals also sometimes occur in numerals (numbers). Failures of working memory, both phonological and orthographic loops, may contribute to reversals when reading problems are present (Brooks, Berninger & Abbott, 2011).



Example of kinesthetic reversal as evident in mistaken use of “b” for “d” in two instances

Rexulti® (see anti-psychotic medications)

Risperdal® (see anti-psychotic medications)

Ritalin® (see stimulants and other ADHD medications)

Rosenthal (pygmalion) effect

The Rosenthal or pygmalion effect concerns the notion of self-fulfilling prophecies, specifically that low expectations might contribute to actual low student achievement. This intuitively plausible idea seemed to receive empirical support from research conducted in the 1960s when narrowly-focused investigations were conducted. One study randomly assigned students to conditions in which their teachers were led to believe they would become “bloomers,” in other words soon blossom with cognitive growth (Rosenthal & Jacobson, 1968). In contrast to students who were randomly assigned to a control condition (i.e., who are not characterized as “bloomers”), those taught by a teacher with higher expectations (the bloomer group) had better scores on year-end IQ testing. This original research, and much that soon followed, has been criticized for methodological weaknesses (Spitz, 1999). Furthermore, IQ differences

between experimental and control groups in the original study were fairly small, possible methodological problems notwithstanding.

Nonetheless, the prospect of raising students IQs via higher expectations still seems to resonate. Achievement, not IQ, might be a different matter. For example, one or more students in a classroom might (for any number of reasons such as gender or ethnic bias) engender negative expectations on the part of his teacher, which in turn might constrain his/her acquisition of academic skills. Obviously, part of psychologists' duty as consultants is to assess possibilities such as this when involved with individual students and to take steps as necessary. More broadly, the notion of expectation and achievement seems to still be operative (consider the rationale for the *No Child Left Behind* legislation signed by President George W. Bush). System wide efforts to assure that every student (regardless of race, ethnicity, language background, gender and disability status) is supported and filled with expectations for academic and life success would seem to be an obligation of every school psychologist.

The related concept of stereotype threat is also relevant (see separate entry).

Rubella (see TORCH)

10. S – T

Saphris® (see anti-psychotic medications)

Savant (savantism)

Refers to an individual who possesses outstanding (but narrow) knowledge, skills, or capabilities. These capabilities may be exemplified by knowledge of math, arcane topics (e.g., airline schedules), or musical or artistic capabilities. Especially in cases of autism spectrum disorder (ASD) with savantism, the individual suffers impairments on other dimensions, such as adaptive functioning and socialization. Such impairments stand in stark contrast to his/her savant capabilities. Savantism occurs disproportionately among individuals with ASD (at rates estimated from approximately 10% to 30%), depending on the degree of exceptional talent required for a designation (Dubischar-Krivec, Bolte, Braun, Poustka, Birbaumer & Neumann, 2014). Savant-like characteristics, however, are not a diagnostic criterion for ASD. See DSM-5 page 50, for the diagnostic criteria for ASD.

Scaffolding

This concerns a group of procedures teachers or others (e.g., aides, support staff, tutors) use to support and guide student learning. The idea is that scaffolding enables students to execute skills that they are not yet able to demonstrate independently. The scaffold typically buttresses a knowledge or skill deficit that would otherwise constrain the execution of a task. For example, a student with limited general knowledge is assigned to read a passage about the American Civil War and would later need to answer questions about what she had read. Her teacher, however, provides scaffolding because he knows that she lacks some background facts needed to make sense of the reading assignment. This might consist of a refresher about the 1861 map of the United States. It might also involve clarification of 1861 attitudes about slavery/emancipation held by residents of Union and Confederate states. The nature, complexity, and life-span of scaffolds vary greatly. In general, the idea is that, like physical scaffolds used in building construction, instructional scaffolds are removed or trimmed down when no longer needed.

For more details see the following link from Peabody College at Vanderbilt University: <https://iris.peabody.vanderbilt.edu/module/sca/cresource/q1/p01/>.

Schedules of reinforcement

Reinforcement (events that occur after an operant behavior and change its probability) can be characterized in various ways. These are important for school psychologists who are attempting to understand and change students' overt behavior. Specifically, schedules of reinforcement help determine how readily new behaviors are acquired and old ones extinguished. For example, continuous reinforcement (instances in which behavior is reinforced each time it is emitted) helps assure that new behaviors are learned as rapidly as possible. In contrast, intermittent reinforcement (instances in which behavior is reinforced only some of the times when it is emitted) typically leads to slower acquisition but greater resistance to extinction.

Thus, when school psychologists plan behavioral intervention plans (BIPs), the continuous reinforcement vs.

intermittent reinforcement distinction matters. This is especially the case when undesirable behavior, such as tantrums, have a history of reinforcement via teacher attention. Attempts to extinguish tantrums by ignoring work only as long as complete (or nearly complete) inattention follows each tantrum. Otherwise, the attempt to extinguish the behavior is actually a type of intermittent reinforcement, perhaps inadvertently inoculating the behavior from easy extinction. The table below includes sub-distinctions of continuous and intermittent reinforcement. Standard textbooks on behavior modification, such as Kazdin (2011), offer considerably more details on this topic.

Various schedules of reinforcement			
General schedule of reinforcement	Specific schedule of reinforcement	Rules for dispensing reinforcement	Effect on acquisition and extinction
Continuous reinforcement	--	Reinforcement of each and every occurrence of the behavior	Facilitates acquisition; facilitates extinction
Intermittent reinforcement	Fixed ratio	Reinforcement at an established rate (e.g., every 10th occurrence)	Facilitates resistance to extinction but may constrain acquisition
	Fixed interval	Reinforcement within predictable intervals (e.g., first occurrence with a 5-minute window)	Facilitates resistance to extinction but may constrain acquisition
	Variable ratio	Reinforcement on a somewhat unpredictable schedule (e.g., randomly but averaging after 10 occurrences)	Facilitates resistance to extinction (perhaps greatly) but may constrain acquisition
	Variable interval	Reinforcement on a somewhat unpredictable schedule (e.g., randomly but the first occurrence on average after 6 minutes)	Facilitates resistance to extinction (perhaps greatly) but may constrain acquisition

Schema

The basic building block of knowledge, according to the theory of Jean Piaget. During progressive stages of child development, schema become more complex, differentiated, as well as less tied to the senses and motor actions and more characterized by abstraction and high-level cognition.

School connectedness

School connectedness is often considered to comprise several interrelated elements: interpersonal attachments, attachment to the school, as well as a positive attitude toward school. This follows from the expectation, or belief, held by students that adults in the school community (e.g., teachers, administrators) care about them individually and are concerned about their learning. A document entitled the Wingspread Declaration suggests that several factors contribute to school connectedness:

- expression of high academic expectations coupled with support for learning
- positive relationships between adults at school and students
- student safety that encompasses both physical and emotional dimensions



Photo by Adam Winger, courtesy of Unsplash

Connectedness is arguably important to develop because of its association with student motivation and an array of desirable outcomes, such as academic success, graduation rates, and regular attendance.

See the following link with further details on this topic prepared by Robert W. Blum <http://www.ascd.org/publications/educational-leadership/apr05/vol62/num07/A-Case-for-School-Connectedness.aspx>

Section 504 definition

School psychologists are often involved in Section 504 determinations. To be protected under Section 504, “a student must be determined to:

1. *have a physical or mental impairment that substantially limits one or more major life activities; or*
2. *have a record of such an impairment; or*
3. *be regarded as having such an impairment.”*

Section 504 requires that school districts provide a free appropriate public education (FAPE) for all qualified students in their jurisdictions (i.e., all students with a physical or mental impairment that substantially limits one or more major life activities). It is common for students with ADHD, as an example, to have 504 accommodation plans to assure that they receive FAPE.

Extensive information is available on the U.S. Department of Education website regarding school implementation of Section 504 via the following two links. <http://www2.ed.gov/about/offices/list/ocr/504faq.html>.

<https://www2.ed.gov/about/offices/list/ocr/docs/504-resource-guide-201612.pdf>

Seizure (see epilepsy)

Sensitivity (see diagnostic utility statistics)

Sensory processing deficits/sensory-based therapies

Sometimes learning and behavior problems are ascribed to deficits in sensory processing. This inference, however, has been challenged as inaccurate because more recognized explanations exist (e.g., ADHD, autism, or intellectual disability). In fact, the American Academy of Pediatrics (AAP) advocates against use of “sensory processing disorder” as an independent diagnosis.

Parallel considerations are present regarding therapy. Specifically, AAP urges telling families that there is limited data supporting sensory therapies (e.g., use of brushes, swings, and balls). This is especially true when such therapies stand alone, rather than when delivered as part of a comprehensive intervention plan.

School psychologists may want to learn more from the following American Academy of Pediatrics link: <https://healthychildren.org/English/news/Pages/AAP-Recommend-Careful-Approach-to-Using-Sensory-Based-Therapies.aspx>.

Serotonin selective reuptake inhibitors (SSRIs)

SSRIs are a class of psychiatric medications typically used to treat depression but also employed for social anxiety and obsessive-compulsive disorder (also see anti-depressant medications). SSRIs work by blocking reabsorption into the presynaptic neuron of a neurotransmitter called serotonin. Trade names for SSRIs include Prozac®, Zoloft®, and Praxil®. Beside their therapeutic benefits, there is some evidence that SSRIs are associated with new or worsening thoughts of suicide. The National Institute of Mental Health advocates for adolescent depression to be treated with combined medication and psychotherapy, such as cognitive behavior therapy (CBT).

Facts on the treatment of adolescent depression with SSRIs and CBT are available at this National Institute of Health link: <http://www.nimh.nih.gov/funding/clinical-research/practical/tads/questions-and-answers-about-the-nimh-treatment-for-adolescents-with-depression-study-tads.shtml>

Seroquel® (see anti-psychotic medications)

Serzone® (see anti-depressant medications)

Shaping (in behavior modification)

Shaping refers to a behavioral technique that involves development of new behavior by successive approximations. Shaping takes place when small steps, each approximating the final desired behavior, are reinforced. Shaping is

important for school psychologists to understand because for many students it represents a powerful tool for establishing previously nonexistent behavior, such as social or academic skills.

Sickle cell trait/disease

Some individuals, especially those from families with sub-Saharan African origin, carry a gene variant (i.e., an allele) associated with sickle cell. Although this variant appears to confer protection against malaria in Africa, it is also capable of altering hemoglobin and consequently causing blood-related difficulties. Sickle cell disease per se occurs when two copies of this allele are present (this is an autosomal recessive disorder), but a single copy can result in sickle cell trait and some, but not all, of the problems cited below. Hemoglobin with a sickle cell shape may lead to stroke, accumulation of blood in various joints, and consequently neurological symptoms associated with the former or pain associated with the latter.

The presence of sickle cell disease or trait is important for school psychologist to recognize because affected students may miss class due to pain, doctors' appointments, or occasional infections. Similarly, it is important for school psychologists to understand that a host of neurological symptoms can arise if a stroke occurs. These may take place in one-quarter to one-third of children affected with sickle cell disease (Schatz & McClellan, 2006). Research suggests that decrements in IQ, nonverbal ability and achievement (especially in math) may accompany "documentable" strokes. Even "suspected" strokes are associated with attention and executive problems (Schatz & McClellan, 2006). More surprising is the presence of executive, memory, and academic difficulties among some children with no history of stroke, perhaps due to insufficient oxygen and glucose delivery. Processing speed may also be slowed, perhaps due to central executive dysfunction (Smith & Schatz, 2016). Thus, it is hardly surprising that more than half (58%) of parents in one study expressed concern about educational problems for their children with sickle cell disease (Mayes, Wolfe-Christensen, Mullins, & Cain, 2011).

For additional information, see the following link from the National Institutes of Health: www.nhlbi.nih.gov/health/health-topics/topics/sca/

Sight vocabulary

Sight vocabulary refers to the subset of words that a reader is able to identify rapidly, reliably, and accurately without needing to resort to phonics-related decoding strategies. Without a grade-level sight vocabulary some students struggle to read passages fluently and this fact, in turn, can constrain reading comprehension. Understandably, many reading experts advocate that every student develop a strong sight vocabulary. Many basal reading programs include drills to help accomplish this. There are lists of high-frequency words that were once routinely taught as sight vocabulary to elementary students. One famous set is entitled the Dolch 220 list. This list is still sometimes encountered as an instruction target for poor readers.

For more information, see the following link from the Iowa Reading Research Center: <https://iowareadingresearch.org/blog/teaching-sight-words>.

Significance (statistical versus clinical)

Statistical significance has a specific meaning, which is commonly misunderstood by the lay public and sometimes forgotten by school psychologists. Statistical significance simply indicates that an association between variables (e.g.,

the difference between an experimental and a control group) was unlikely to have arisen by mere chance (i.e., is statistically improbable). Unfortunately, consumers of psychological research might assume that statistical significance implies that important practical differences have been detected. In other words, it's easy to think, incorrectly, that "significance" in the statistical sense connotes "significance" in the everyday sense.

Although seeming counterintuitive, statistically significant findings are sometimes practically trivial. For example, the difference in reading proficiency between individuals in an experimental and a control group might be quite slight (and devoid of real importance) even if these differences are statistically significant (not due to chance). To address the issue of clinical or practical significance, consumers of psychological research are generally advised to attend to indicators of "effect size" (quantitative measures of the strength of an association). This tells them, for instance, how large mean differences are between experimental and control groups (e.g., Cohen's *d*) or how much of the variance in a dependent variable is explained by an independent variable (e.g., eta squared). Also see the entry for effect size.

Skill versus performance deficit

Skill deficits referred lack of attainment of particular, tangible proficiencies. These may pertain to, for example, computational arithmetic or oral reading skills. Skills are viewed as the product of direct instruction. It can be important for school psychologists to distinguish skill deficits from performance deficits. Students with performance deficits actually possess skills but (sometimes, perhaps often) fail to express them. This situation seems to be common among students with attention, motivation, or psychiatric problems. When academic problems are present, part of the problem solving and consultation process is to distinguish whether the problem is principally one of skill or performance. Obviously, different courses of action are necessary in each instance. Thorough collection of background information, work samples, and straightforward assessment of skills helps untangle these two competing possibilities.

SNRI (Serotonin Norepinephrine Reuptake Inhibitor; see anti-depressant medications)

Social maladjustment clause

Some writers have argued that the mention of "socially maladjusted" in the IDEA definition of emotional disability (ED) has a meaning that helps determine whether ED is present. Specifically, it is sometimes contended that documentation of social maladjustment is sufficient to rule out eligibility for ED. Careful reading of the ED definition, however, makes this conclusion dubious. Here is the critical phrase, which appears at the end of the definition, "*The term does not apply to children who are socially maladjusted, unless it is determined that they have a serious emotional disability.*" Other scholars have argued that there are logical and empirical limits in school psychologists' ability to make reliable judgments about whether social maladjustment is or isn't present and that even if present social maladjustment does not preclude ED designation (Olympia et al., 2004). Consequently, school psychologists and multidisciplinary teams may choose to use circumspection regarding this confusing clause. See entry for emotional disability, which provides a verbatim definition.

Specific language impairment

Students with specific language impairments are regularly encountered by school psychologists because the condition

is so common among those referred for psychoeducational evaluations. These children are exemplified, for example, by deficient WISC-5 Verbal Comprehension Index scores (or other psychometric indicators of language development) coupled with delayed acquisition of linguistic milestones. Language-intensive school tasks, such as reading comprehension and certain content subjects (e.g., English, social studies) often prove to be difficult (Wodrich & Schmitt, 2006). Social shortcomings are common. Research suggests high rates of psychiatric comorbidity (Beitchman et al., 2001).

When school psychologists are involved, students with specific language impairment often qualify for specific learning disabilities designation with basic reading, reading comprehension, oral expression, and listening comprehension typically being areas that are impacted. Early on, the students may be identified as having speech language impairment and receive services from a speech language pathologist. Note: Specific language impairment should not be confused with speech or language impairment (an IDEA category), which shares the same “SLI” abbreviation, and for which there may be overlap.

Additional information is provided at the following National Institute of Health link: <https://www.nidcd.nih.gov/health/specific-language-impairment>.

Specific learning disability (federal) definition

The following is the IDEA definition of a specific learning disability. “.... A disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in an imperfect ability to listen, think, speak, read, write, or do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, and developmental dyslexia. The term does not include learning problems that are primarily the result of visual, hearing, or motor disabilities, mental retardation, emotional disturbance, or of environmental, cultural or economic disadvantage.”

To add clarity to this definition and to assist teams in identifying students with SLD, three broad approaches have emerged. Most school psychology training programs devote considerable didactic coverage plus extensive clinical supervision to assure students understand these three approaches and can apply one or more of them in practice. Each state, however, creates its own regulations. Thus, each state may require, permit, or prohibit one or more of the three approaches (Maki, Floyd & Roberson, 2015), which are summarized here:

- **Ability/achievement discrepancy:** SLD is conceptualized as unexpected academic underachievement. The identification process concentrates on documenting low achievement (especially on individually administered tests) compared to IQ scores.
- **Pattern of strengths and weaknesses (PSW):** an alternative to ability/achievement discrepancy in which SLD is conceptualized as a processing disorder documented by severe discrepancies among a student's cognitive strengths and weaknesses that match academic deficits.
- **Response to Intervention (RTI):** an alternative to ability/achievement discrepancy in which SLD is conceptualized as persistent failure to succeed even when a student is provided targeted and increasingly intensive interventions.

Which of these approaches is best represents among the most hotly debated aspects of school psychology (e.g., see Hale et al., 2010), although it is argued that logically the approaches are more complementary than contradictory (Wodrich, Spencer & Daley, 2006). Note: RTI is also an important general education prevention and intervention approach (see response to intervention entry). Also see the following link: <https://sites.ed.gov/idea/regs/b/a/300.8/c>.

Specificity (see diagnostic utility statistics)

Speech or language impairment (federal) definition

The following is the IDEA definition of a speech or language impairment. “*Speech or language impairment means a communication disorder such as stuttering, impaired articulation, a language impairment, or voice impairment that adversely affects a child’s educational performance.*” Note: A speech or language impairment is not to be confused with a specific language impairment, which shares the same “SLI” abbreviation, and for which there may be overlap.

Also see the following link: <https://sites.ed.gov/idea/regs/b/a/300.8/c>.

Splinter skills

This refers to islands of well-developed skills, generally assumed to be non-cognitive in nature, that exist in the presence of broader cognitive delays. Splinter skills are exemplified by adequate, or even advanced, motor speed or rote memory development seen in a student with low overall IQ. The presence of splinter skills can prove confusing to school psychologists when they make inferences about cognitive capability. In general, isolated skills, especially if they are not applicable across an array of school situations, are not used to anchor general cognitive capability. That is, splinter skills would not typically be used in calculating ability/achievement discrepancies. WISC-5 scores like the General Ability Index may sometimes be used in lieu of full scale IQ (also see savant). Additional information is available in Wodrich and Schmitt (2006).

SSRI (Serotonin Specific Reuptake Inhibitor; see anti-depressant medications).

Standards for Educational and Psychological Testing

This is an essential guide that was prepared jointly by the American Educational Research Association, the American Psychological Association, and the National Council on Measurement in Education. This comprehensive document, available in paperback and e-book options, provides essential information about the uses of psychological testing including: requirements for reliability and validity, norms, scoring, interpretation, and fairness, and testing of individuals from diverse linguistic backgrounds. Consequently, it is an important source of information and guidance for school psychologists who use psychometric tests as part of their practice.

The *Standards* are now available for downloading free of charge: https://www.testingstandards.net/uploads/7/6/6/4/76643089/standards_2014edition.pdf.

State/trait distinction

Psychological states concern dimensions that are subject to change (e.g., anxiety level). Traits, in contrast, are conceptualized as enduring characteristics (e.g., sociopathy). This is an important distinction for school psychologists as the former might be a target for change via intervention, whereas the latter typically are not targets for change.

Moreover, school psychologists might be able to measure changes (improvements) in psychological states by repeated assessments (e.g., pre-post rating scale score changes).

Stelazine® (see anti-psychotic medications)

Stereotype threat

This notion from social psychology concerns the situation in which members of a group (e.g., women, Latinos) are at risk of confirming a pre-existing stereotype about themselves. The idea is that existence of the stereotype (e.g., women are less mathematically capable) compromises actual performance in the way that the stereotype would imply. That is, the girls-are-less-capable-in-math stereotype could set up a situation in which girls actually do less well in math than their male counterparts. This might happen when girls attentive to this stereotype avoid enrolling in advanced math classes or second guess their solutions to math problems in the classes in which they actually are enrolled. For school psychologists, awareness of widely endorsed stereotypes is an important first step in mitigating the potential negative effect of any stereotype threat.

For more information, see the following link from the American Psychological Association: <http://www.apa.org/research/action/stereotype.aspx>.

Stereotypies

This term denotes repetitive, abnormal movements that include a ritualistic quality (e.g., hand flapping, spinning). Stereotypies are important for school psychologists to recognize because they sometimes occur among children with autism but are rare among individuals without autism. See DSM-5, pages 50 and 77.

Stimulants and other ADHD medications

ADHD is among the most widely treated childhood psychiatric disorders. The most commonly prescribed group of medications for ADHD is stimulants. These now exist in various formulas and delivery methods, many of which have been designed to circumvent their otherwise brief period of therapeutic effect (sometimes as few as three hours when a simple tablet formulation is used). There now exist options for stimulants in the form of liquids, pills, sustained-release tablets, and skin patches. Newer versions of stimulants also may help with the rebound effect that sometimes appears as medications wash out. New versions may also help reduce an array of possible side effects (e.g., appetite suppression, insomnia).



Photo by Hal Gatewood, courtesy Unsplash

In part to help avoid potential abuse of stimulants, pharmaceutical companies have developed non-stimulant options for use with ADHD. Unlike stimulants that work via the dopamine and norepinephrine neurotransmitter systems, some

of the current options work via the norepinephrine system only. Note also, that many of the tricyclic medications, once popular in the treatment of depression (see anti-depressant medications), are occasionally used to treat ADHD.

Trade name	Generic name	Sub-category	Onset/duration of effect
Adderall®	dextroamphetamine	Stimulant	Rapid, relatively sustained
Concerta®	methylphenidate	Stimulant	Rapid, relatively sustained
Daytrana®	methylphenidate	Stimulant	Rapid, relatively sustained
Dexedrine®	dextroamphetamine	Stimulant	Rapid, short-lived (depending on formula)
Focalin®	methylphenidate	Stimulant	Rapid, brief
Intuniv®	guanfacine	Non-stimulant	Rapid, sustained
Kapvay®	clonidine	Non-stimulant	Rapid, sustained (depending on formula)
Metadate®	methylphenidate	Stimulant	Rapid, relatively sustained
Methylin®	methylphenidate	Stimulant	Rapid, brief
Procentra®	dextroamphetamine	Stimulant	Rapid, relatively sustained
Qelbree®	viloxazine	Non-stimulant	Rapid, sustained
Ritalin®	methylphenidate	Stimulant	Rapid, short-lived effect (depending on formula)
Strattera®	atomoxetine	Non-stimulant	Rapid, sustained
Tenex®	guanfacine	Non-stimulant	Rapid, sustained
Vyvanse®	dextroamphetamine	Stimulant	Rapid, relatively sustained

For more information see the following link from National Institutes of Health: <https://www.nimh.nih.gov/health/topics/mental-health-medications/index.shtml>

Information is also available from the American Academy of Pediatrics: <https://depts.washington.edu/dbpeds/13StimulantMedicationManage.pdf>

Additional information is also available from a user-friendly site provided by Ohio Minds Matter: <http://ohiomindsmatter.org/about>

Note: Stimulants are controlled substances, can be altered for delivery as a street drug, and can be addictive when abused.

Strabismus

This denotes misalignment of the eyes, sometimes referred to as being “cross-eyed” or having a “wandering eye.” The condition is important for school psychologists because it is fairly common, requires management by a vision care specialist, and might contribute to a student’s presenting problem (e.g., inability to perform well academically). Other terms such as, “exotropia” (eyes diverge), “estropia” (eyes are crossed), or “hypertropia” (eyes are vertically misaligned) might also be seen in students’ health records.

The following link from Stanford University might be helpful: <http://www.stanfordchildrens.org/en/topic/default?id=crossed-eyes-strabismus-90-P02109>

Strategy training (such as for students with ADHD)

As implied by its name, strategy training refers to explicitly taught and highly-practiced strategies that fit a particular academic situation (Daily & Birchwood, 2010). It seems that strategy training is best suited for students in middle school and higher grades. At this level, strategy training might be applied to student-specific challenges such as tackling homework or effective notetaking during class. Although intuitively plausible, strategy training has not yet been subjected to rigorous research. For school psychologists, it probably makes the most sense to use strategy training on a case-by-case basis during consultation when careful progress monitoring is part of the consultation process.

Strattera® (see stimulants and other ADHD medications)

Structure (used to diminish problematic behavior)

“Structure” is often encouraged as a remedy for problematic behavior, especially among young children and those with ADHD. In fact, parents and those without behavioral training are often quick to talk about the need for structure as if it were a panacea. Accordingly, it makes sense to specify exactly what is meant by structure.

A first (simple) notion of structure is the establishment of routines coupled with the expectation that routines are followed. The idea here is that if students become accustomed to doing the same activities in the same order every day that eventually they will simply do so without need for thought or external guidance. A corollary to this conceptualization of structure is that as students build up habit strength for acceptable actions that problems will shrink. Examples might be a morning routine for a first grade class that involves entering the classroom, placing coats in a designated spot, followed by moving directly to one’s desk, then followed by the entire classroom quietly waiting for the teacher’s direction about what comes next. With structure, students would come to anticipate what follows each preceding step. To support this, a menu of activities might always be posted.

A second conceptualization of structure is more behaviorally-oriented. During situations in which one (or several) students risk inappropriate behavior adults (teacher, parents) intervene with structure. This notion of structure commonly involves explicit teacher-to-student directions. To maximize effectiveness, a student might be told, for example, what precisely is expected in the near term, which actions are acceptable, which actions are unacceptable and the consequences she can expect for following either the acceptable or the unacceptable option. Details might include a student with problematic behavior who is told before leaving the classroom for the cafeteria that she is expected to keep hands to herself, follow immediately behind the student in front of her, use an inside voice, and stop to wait when reaching the cafeteria door. To add structure, she is then told if she follows these directives, she will maintain her position in the lunchroom line. On the other hand, if she violates these directives, she will be subject to immediate removal from her current lunch-line position and peremptory placed at the very end of the line.

As school psychologists will recognize, both of these meanings of structure may suggest ways to help students with limited executive function and poor planning ability. It is also noteworthy that using either style of structure would be unnecessarily stifling to older students or students without executive dysfunction. For many students, however, the habitual conceptualization of structure (the first meaning of structure) seems less effective than providing clear, in-advance directions about what is expected coupled with well-defined contingencies (the second meaning of structure). Serving as consultants, school psychologists might aid teachers and parents considering use of either (or both) notions of structure.

Sublexical

Refers to parts of a word rather than a word as a whole. In reading instruction, the term is sometimes used to indicate focus on phonemes (and their association with letters or groups of letters) rather than reading by identification of whole words.

Successive approximations (see shaping)

Sugar (as cause of hyperactive behavior)

Excessive sugar consumption is believed by many parents and teachers to cause temporary hyperactivity (witness, for example, parents' comments at birthday parties as the consumptions of sweets and wild behavior both rise). Yet there appears to be limited support for any such association. A comprehensive review of the empirical research from way back in 1986 still appears to hold true: "Most studies have failed to find any effects associated with sugar ingestion, and the few studies that have found effects have been as likely to find sugar improving behavior as making it worse." (Milich, Wolraich, & Lindgren, 1986, p. 493).

T-score

A type of standard score with a mean of 50 and a standard deviation of 10.

Tarasoff v. California Board of Regents

This is an important legal decision establishing that mental health professionals, presumably including school psychologists, have a duty to protect persons who are being threatened with physical harm. Confidentiality as might exist between a professional and a client is waived under certain circumstances, such as threats to harm another. Under these circumstances there is a requirement to warn the threatened individual, the police, or to take some alternative action to assure protection. There is, however, state-to-state variability in the adoption of Tarasoff's requirements. Unfortunately, implementing the requirements of Tarasoff can prove complex and potentially confusing (Bersoff, 2013; Felthous, 2006). Consequently, many school psychologists seek advice from senior colleagues and legal counsel when elements of Tarasoff might be at issue for a student. The provisions of the Tarasoff case are sometimes referred to simply as "duty to warn."

Details on the case can be found at the following link from Stanford University: <https://scocal.stanford.edu/opinion/tarasoff-v-regents-university-california-30278>

Tenex® (see stimulants and other ADHD medications)

Tests of Variables of Attention-TOVA (see continuous performance tests)

Theory of mind

A developmental skill that is routinely mastered during the course of psychological growth that may be absent, or impaired, among children with autism (see Baron-Cohen, Leslie & Frith, 1985). Theory of mind involves the ability to recognize that others possess a mind of their own (including their own knowledge, perceptions, and attitudes) that logically is distinct from everyone else's. A child with autism, however, may fail to recognize that classmates lack interest in a bottlecap collection that he/she adores. Similarly, a child with autism may act as if a classmate experienced the pleasant taste of chocolate milk he just consumed for lunch even though the classmate drank water, not milk, with her meal. According to this theory, children with autism fail to act "mentalistically." They are sometimes said to be "mind blind." It is important for school psychologists to recognize that impaired theory of mind may help explain behavior seen among children with autism. Moreover, theory of mind tests are sometimes included in psychometric test batteries (e.g., NEPSY-II; Korkman, Kirk & Kemp, 2007). However, limited research is available to confirm the diagnostic utility of theory of mind measures as adjuncts to autism diagnostic tools.

See the following link from Simply Psychology for more details: <https://www.simplypsychology.org/theory-of-mind.html>

Thorazine® (see anti-psychotic medications)

Threat assessment

In the context of schools, threat assessment refers to evaluation of real or potential threats made by a student. Understandably, such threats take various forms from explicit and clear indications of wanting to harm one or more persons to vague and implied indications suggesting this possibility. School psychologists are frequently involved as part of a team to assess such threats. Typically, a school policy exists, and team members have received advanced training to enable policy implementation.

More details are available at the following NASP link: <https://www.nasponline.org/resources-and-publications/resources/school-safety-and-crisis/threat-assessment-at-school/threat-assessment-for-school-administrators-and-crisis-teams>.

Thought disorder

A term that refers to impaired ability to generate logical statements and explanations. In adults, this is seen as a hallmark of schizophrenia or another psychotic disorder. Among children, however, it can be difficult for practitioners to make a confident determination that a thought disorder is present. For instance, apparent circumstantiality (explanations that

are overly detailed and digress so much that the flow of thinking may be difficult to follow) might simply reflect severe language impairment and/or cognitive immaturity.

Threats to internal and external validity (when interpreting psychological research)

Most school psychologists are concerned with interpreting, rather than conducting, research. Their challenge is to stay abreast of research and make judgments about the validity of studies that they have read or heard about. Skepticism is a valuable professional trait in contemporary times. Today's parents and teachers are apt to cite claims of treatment efficacy for one condition or another that they have learned about from the internet. Of course, many of these claims may be untrue. Two concepts, internal and external validity, can be especially helpful when school psychologists scrutinize research.

Threats to internal validity relate to independent variables and their apparent effect on dependent variables. For example, a group of poor readers participates in a novel summer reading program and is found to improve an entire grade level in three months. One might infer that the novel reading program caused the reported skill boost. However, there are a host of threats to internal validity that prompt uncertainty. Perhaps some, or all, of the gain is due to maturation (as brain's mature so does their ability to perform most tasks). Or perhaps higher post-test scores arise simply because of practice effects associated with taking the same reading test (the study's dependent variable) twice. Researchers can handle many threats to internal validity by use of experimental and control groups (and by related practices, such as careful, random assignment of individuals to each group). Classic texts on internal and external validity, such as Campbell and Stanley (1966), describe a host of other threats to internal validity. Although dated, this concise guide remains extremely valuable today for anyone interested in learning to think critically about the research she encounters.

External validity concerns the extent to which results from a particular study can be applied more broadly. The threat is that a specific study's conclusions are of limited relevance to the setting where a particular school psychologist works. For example, even if it is concluded that the reading intervention (mentioned above) was truly responsible for the reading gains described, questions remain about applicability in new settings. Perhaps especially skilled teachers implemented the reading program in this study (e.g., teachers in the study might have averaged many years of experience in reading instruction) but no such teachers are available in the school psychologist's venue. Similarly, participants in one study's site may have cognitive or demographic characteristics dissimilar from those in another site. Perhaps the novel program actually works, but not for all students.

By remembering the importance of internal and external validity, school psychologists hope to become better, more vigilant, consumers of research.

Tics/Tourette's disorder

Tics are defined as recurrent, sudden, rapid, non-rhythmic movements or vocalizations. They may be repeated many times and are quite stereotyped. Movement around the eyes, nose, and mouth are quite common manifestations. DSM-5 provide specific facts about various sub-delineation of tics, with Tourette disorder representing the most severe variation. Tics are sometimes exacerbated by situational stress (e.g., needing to stand up and speak in front of classmates). For many students, tics' frequency and severity declines at adolescents. Before then, a waxing and waning course is common.

It is important for school psychologists to recognize the tics are quite common (found in perhaps as many as 7% of school-age children) and can be easily overlooked. This fact suggests that tics are often so subtle that their existence may go unnoticed by the child herself as well as by classmates. An important fact regarding tics is the high rate

of comorbidity with conditions such as ADHD, OCD, (Lewin et al., 2011) and learning problems (sometimes involving writing). Guidelines for diagnosis exist, but the diagnostic task rarely falls on school psychologists. See DSM-5, page 81.

Furthermore, practice guidelines exist for interventions, which are outlined in the accompanying link. [http://www.jaacap.com/article/S0890-8567\(13\)00695-3/pdf](http://www.jaacap.com/article/S0890-8567(13)00695-3/pdf).

Timeout

Timeout refers to removal from access to positive reinforcement contingent upon a particular behavior. For example, a student is removed from the playground (assuming this represents positive reinforcement) contingent upon teasing another student. This procedure aims to decrease the frequency of a particular behavior (teasing).

For better or worse, the idea of timeout has now made its way into popular culture. Sometimes, however, the concept is misunderstood and misapplied. The central idea is actually timeout from positive reinforcement. This presupposes that a child occupies a highly reinforcing environment before he/she is contingently removed for misbehavior. School psychologists, of course, recognize that many classroom environments provide limited ongoing reinforcement, at least for some students. Consequently, removing a student from tedious seatwork for violating a rule (e.g., talking with a classmate) is unlikely to reduce the rate of violating that rule. Conversely, a brief period of isolation from playground activities contingent on breaking a playground rule might stand a better chance of working. Because timeout's effectiveness usually depends on reduction of stimulation, and accordingly attention from others, ignoring is often required to make the procedure work. This proves difficult for many teachers and parents who often want to attend to the student before or after the behavior, thus mitigating the impact of timeout. That is to say, a heart-felt discussion of the need to follow rules generally and the nature of the misbehavior the just lead to timeout may be counterproductive. Often a functional behavior analysis (FBA) is helpful if timeout is to be used effectively.

Titration (of medication)

This refers to the practice of adjusting medicine to a proper (therapeutic) level. The notion of titration is important for school psychologists because, for example, stimulant medications used to treat ADHD often require adjustment. Because individual reactions are so varied, as are side effects, monitoring of attention, work completion, and behavior may be needed to optimize titration. The same is true regarding side effects.

***Tofranil* (see anti-depressant medications)**

TORCH syndrome

This acronym refers to various infections of a developing fetus or newborn that result in a host of related symptoms (e.g., fever, rash, jaundice). The infectious agents are listed below:

- (T) toxoplasmosis
- (O) other agents
- (R) rubella
- (C) cytomegalovirus
- (H) herpes simplex

If affected from birth (congenitally) children with any of these infections encounter a risk of developmental problems. The following link provides more information:

<https://rarediseases.org/rare-diseases/torch-syndrome/>.

TOVA (see continuous performance tests)

Toxoplasmosis (see TORCH)

Tracking (related to rule following)

The notion of tracking in the context of school-age children refers to ongoing compliance with a previously stated (or already known) rule. This is an important concept for school psychologists because failures of tracking are common among young children and those with ADHD. A student who shouts out an answer in class may either have failed to track the rule to wait until called on or alternatively intentionally flaunted that rule.

Ongoing (day-to-day, minute-to-minute) rule following is probably more complex than it appears. This is because for a student to comport his behavior with classroom (or playground or home) rules requires orchestration of many mental and behavioral components. These include retention of the applicable rule in long-term memory, searching for and retrieving the rule from memory when needed, holding the rule in working memory, rendering judgments about when the rule should be applied in overt actions, and then actually executing the behavior dictated by the rule. Not surprisingly, this often proves tremendously difficult. Helping distinguish tracking problems from compliance problems is often eye opening. It seems to be a common error to judge that rule breaking is almost always intentional and that it may represent opposition to authority. In many such instances, however, the problem may actually be failure of “tracking.”

Note: Russell Barkley has included the idea of internalization of rules (and keeping track of them) as a core failure in youth with ADHD. This is an element of executive dysfunction (see the following link from Dr. Barkley’s website for more information):

http://www.russellbarkley.org/factsheets/ADHD_EF_and_SR.pdf).

Trapped (related to behavioral programming)

Trapped in the context of applied behavior analysis refers to the eventual replacement of extrinsic reinforcers with natural reinforcers. For example, a behavior intervention plan (BIP) might target homework completion by permitting access to video-game time (positive reinforcement) contingent on nightly completion of assigned work. Over time, however, greater homework completion may elicit naturally occurring teacher and parent praise, and the student may experience an enhanced sense of self-efficacy. As a consequence, the desired behavior change (i.e., greater homework completion) may become “trapped.” If this is the case, continued homework completion might no longer require extrinsic reinforcers (or at least to the same degree). Obviously, trapped behavior is a happy occurrence because few teachers or parents can (or will) engage in behavioral programming indefinitely. Thus, school psychologists may want to consider ways to facilitate trapping when they help devise BIPs.

Trauma (psychological)

Trauma is defined as exposure to a variety of events or situations (e.g., threatened or actual physical or sexual violence, kidnapping, severely frightening motor vehicle accidents). Psychologically meaningful trauma includes indirect experiences, such as a child who learns about severe trauma of a family member. Attention to the prospect of trauma is important for school psychologists because: (1.) trauma is a precondition for determination of posttraumatic stress disorder (PTSD), and (2.) the symptoms of PTSD, or sub-clinical variations of PTSD, sometimes mimic common conditions, such as anxiety, depression and ADHD. In addition, childhood rates of exposure to trauma appear higher than might be intuited (LaGreca & Danzi, 2020). Consequently, some experts (e.g., Grant et al., 2020) advise that routine inquiries be made about possible exposure to significant life stressors and trauma as part of psychological evaluations. Checklists exist to support school psychologists wishing to investigate these possibilities (also see PTSD).

For more information regarding trauma see the following link: <https://www.nctsn.org>.

Traumatic brain injury (federal) definition

The IDEA definition of traumatic brain injury (TBI) is as follows: *Traumatic brain injury means an acquired injury to the brain caused by an external physical force, resulting in total or partial functional disability or psychosocial impairment, or both, that adversely affects a child's educational performance. Traumatic brain injury applies to open or closed head injuries resulting in impairments in one or more areas, such as cognition; language; memory; attention; reasoning; abstract thinking; judgment; problem-solving; sensory, perceptual, and motor abilities; psychosocial behavior; physical functions; information processing; and speech. Traumatic brain injury does not apply to brain injuries that are congenital or degenerative, or to brain injuries induced by birth trauma.*

See the following link: <https://sites.ed.gov/idea/regs/b/a/300.8/c>

Traumatic brain injury (methods for indexing severity)

It is often helpful to know something about the severity of a student's head injury. Although characterizing severity is complicated, simplified systems exist and they are often helpful for school psychologists to know about.

The first system is the Glasgow Coma Scale, which is often determined at the scene of an injury. This might be done on-site by a paramedic crew and later (or again) at an emergency room. The Glasgow Coma Scale ranges from 15 to 3. It is derived by rating an injured individual's presentation on three dimensions: ability to open eyes (e.g., spontaneously, following a verbal command), quality of verbal responses (e.g., indicating proper orientation), and quality of motor responses (e.g., able to follow commands, withdraw from pain). The lower the score the more severe the injury.

A second system is simply an assessment of the duration of any post-injury amnesia. Simply put, this assessment answers the question: Is there an inability to lay down and retrieve new memories and if there is how long from the time of injury does this inability persist (e.g., minutes, hours, or days)? Of course, injury severity is only a general predictor of post-injury cognitive, information processing, and social-emotional considerations.

For more details about the Glasgow Coma Scale see the following link: <https://www.cdc.gov/masstrauma/resources/gcs.pdf>.

For more information regarding posttraumatic amnesia, see the following link: http://www.acquiredbraininjury.com/abi_manual/post-traumatic-amnesia.

Trichotillomania

This refers to the manifestation of repetitive hair pulling (resulting in hair loss) that the youngster is unable to control. Trichotillomania can result in disfiguration (partial baldness) and accompanying social stigma. Not surprisingly, it is highly comorbid with obsessive-compulsive disorder. See DSM-5, page 251. (Also see the entry for alopecia).

Tricyclics (see anti-depressant medications)

Trintellix® (see anti-depressant medications)

Tuberous sclerosis complex (TSC)

TSC is a genetic disorder inherited in an autosomal dominant fashion. This means that an affected parent has a 50% chance of passing on the gene mutation to his/her offspring. Most cases of tuberous sclerosis, however, arise from a spontaneous mutation (and many affected individuals never reproduce). Tuberous sclerosis is a neuro-cutaneous disorder characterized by lesions on the skin and in the central nervous system. The disorder is associated with cognitive learning and emotional impairments. Approximately 90% of these children have epilepsy. Students with the condition are likely to require special education, which makes it relevant to school psychologists.

For more information see the following National Institutes of Health link:

<https://www.ninds.nih.gov/Disorders/Patient-Caregiver-Education/Fact-Sheets/Tuberous-Sclerosis-Fact-Sheet>.

Turner syndrome

Turner syndrome is a genetic condition caused by absence of a second X chromosome, it appears only in girls, nearly all of whom are unable to reproduce. Short stature is almost a universal feature. The genotype is 45XO. Turner syndrome is an important condition for school psychologists because it is commonly associated with math and visuo-spatial deficits and, less commonly, social problems. Learning disabilities in math are quite common (the average girl with Turner syndrome possesses math skills that would make her an extreme outlier in a distribution of neurotypical girls; Baker & Reiss, 2016). Problems with sense of direction and orientation in space are also common. Although diagnosable social-emotional problems may not appear at elevated rates, these girls may nonetheless risk difficulty with interpersonal relations and activities of daily living. Importantly, Turner syndrome may go undiagnosed until the teen years when affected girls fail to develop secondary sex characteristics.

More information is provided in the following National Institute of Health link: <https://ghr.nlm.nih.gov/condition/turner-syndrome> as well as a link from the Turner Syndrome Society: www.turnersyndrome.org/.

Twice exceptional

This term refers to a student who meets criteria for giftedness and also experiences a disability of some type. Among

the most common examples are a gifted student with a specific learning disability or a gifted student with an emotional disability.

The following document, although prepared for use in the state of Colorado, includes interesting and potentially useful information on this topic for all school psychologists:<http://www.cde.state.co.us/sites/default/files/documents/gt/download/pdf/twiceexceptionalresourcehandbook.pdf>.

II. U – V

Universal screening

This refers to a process for assessing all individuals to locate a subset at risk (who might then receive more detailed evaluation or the start of interventions, such as preventative services). Universal screening has long been popular in public health and, by extension, in schools. For example, the 20th century saw universal student screening for vision problems. In contemporary school practice, students may be screened for early reading problems, linguistic delays, or social-emotional difficulties, each of which may warrant more focused evaluation as an aspect of Multi-tiered Systems of Supports (MTSS). Obviously, school psychologists sometimes help devise screening systems and themselves see students who fail a screening and require more in-depth evaluation, such as for learning problems. School psychologists may be invaluable team members because of their psychometric and measurement backgrounds. For example, school psychologists often understand the trade-off between briefer screening tests (with reduced reliability) and longer tests with greater reliability, but which require more effort and incur greater cost. Similarly, they may help establish reasonable cut scores, which in general are more lenient than those for diagnostic tests. Also see Multi-tiered Systems of Supports.

Valium® (see anti-anxiety medications)

Viibryd® (see anti-depressant medications)

Vision training

Vision training, which is sometimes proposed by vision professionals, is a controversial intervention designed to improve the efficiency of the visual system, thus enhancing real-world performance (e.g., in reading). However, the following (medical) organizations have issued a joint statement that concerns vision training and dyslexia: American Academy of Pediatrics, Section on Ophthalmology, Council on Children with Disabilities, American Academy of Ophthalmology, American Association for Pediatric Ophthalmology and Strabismus, American Association of Certified Orthoptists. The statement says in part, “Scientific evidence does not support the efficacy of eye exercises, behavioral vision therapy, or special tinted filters or lenses for improving the long-term educational performance in these complex pediatric neurocognitive conditions.”

Details are available at the following link. <http://pediatrics.aappublications.org/content/124/2/837>

Vraylar® (see anti-psychotic medications)

Vyvanse® (see stimulants and other ADHD medications)

12. W – X

Wait-to-Fail (regarding SLD identification)

For many years, specific learning disability (SLD) determination rested largely on documenting students' underachievement. This was established via low scores on achievement tests compared to IQ test scores. Still used, this approach is sometimes called the Discrepancy Approach to SLD identification. The approach has been critiqued, however, because it appears to require students to wait for identification (see Fuchs, Mock, Morgan & Young, 2003). This has been labeled the “wait to fail” flaw.

The logic is this: students expressing early academic problems are rarely identified because ability test scores and achievement test scores—even among obviously struggling students—seldom are discrepant until third or fourth grade. This phenomenon is easily seen if one opens an achievement test manual and looks at the conversion tables for young students. Among first and second graders relatively few raw score points (which a student might get by guessing alone) sometimes converts to average range achievement test scores. Only when demands step up during third and fourth grade do standard scores among poorly performing students become conspicuously low.

Of course, waiting to receive services is the real potential problem. Those who are forced to wait for assistance risk mounting frustration and the chance that their problems become intractable. Perhaps counterintuitively, the wait-to-fail flaw may not be unique to the SLD discrepancy approach. For instance, a study of Response to Intervention (RTI; an approach used in lieu of the discrepancy approaches to identify and serve students) may not actually lead to earlier identification (see O'Connor, Bocian, Beach, Sanchez, & Flynn, 2013).

Waxing and waning

An idiom borrowed from changes in the phases of the moon but applied to signs and symptoms (especially psychiatric symptoms). For example, mania, as a feature of bipolar disorder, may wax (increase) or wane (decrease) overtime. Similarly, tics have a waxing (intensifying) and waning (diminishing) character.

Wellbutrin® (see anti-depressant medications)

What Works Clearinghouse

A repository for research findings in education that was established by the Institute of Education Sciences. Perhaps most relevant to school psychologists is the tab entitled “Children and Youth with Disabilities.”

See the following link: <https://ies.ed.gov/ncee/wwc/>

Williams syndrome

Williams syndrome is a genetic condition caused by a random deletion in a portion of chromosome #7. It is remarkable

because affected children typically evidence an overly friendly personality style and loquaciousness. Distinctive facial features are often present. Most have cognitive impairments or specific learning disabilities that bring them into contact with school psychologists. When evaluated, many are found to also experience ADHD, anxiety, or phobias. Psychometric testing may reveal visual-spatial problems.

Additional information is available from the following National Institutes of Health link: <https://www.ninds.nih.gov/Disorders/All-Disorders/Williams-Syndrome-Information-Page>.

<https://ghr.nlm.nih.gov/condition/williams-syndrome>

Other information can be found at the site from the Williams Syndrome Association: <https://williams-syndrome.org>.

Wraparound services

Services envisioned to wraparound a student and respond to his/her needs across settings. Such services are compatible with MTSS as well as campus-based clinics that provide integrated mental health and pediatric health care services.

Xanax[®] (see anti-anxiety medications)

13. Y – Z

z-score

A type of standard score with a mean of zero and a standard deviation of one.

***Zoloft*® (see anti-depressant medications)**

Zone of proximal development

This concerns an important concept developed by Russian psychologist Lev Vygotsky that concerns the role of educators in offering supports for students during the process of skill acquisition. The idea is that there is a zone between students' manifest skill level when they work independently and their manifest skill level when supported by teachers. Optimized instruction occurs within this zone. Scaffolding (see separate entry) is often suggested as a teaching strategy to be used within this same zone.

***Zyrex*a® (see anti-psychotic medications)**

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- waxing and waning
- Wellbutrin[®] (see anti-depressant medications)
- Williams syndrome
- wraparound services
- Xanax[®] (see anti-anxiety medications)
- z-score
- Zoloft[®] (see anti-depressant medications)
- zone of proximal development
- Zyprexa[®] (see anti-psychotic medications)

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