

Testing Introduction to Referral Sources

Introduction

As a young science, psychology and its subdisciplines have dramatically grown and further differentiated during the last several decades. Although the average consumer of health services is often unaware of all of the intricacies and minutiae within any specific specialty, it has become increasingly self-evident that some psychological services lack uniformity both in the way of defining and in its way of delivering them even among the members of the field. Among many of its intrinsic problems, the science of psychological assessment exists in an accepted state of heterogeneous formats; battery selection designs, lack of uniformity in report creation, and managed care determined referral questions. It would be pretentious to attempt providing a solution to many of these matters simultaneously. The scope of my comments here will attempt to communicate one opinion with regards to the current state of psychological testing and to inform one of our more significant referral colleagues, pediatricians, about one structural effort at establishing psychological testing type uniformity.

Historical Background

In its origin, evaluation within psychology can be traced back to multiple historical sources. As a clinician, I like to use John Watson's development of an empirically based laboratory to measure psychophysiological functions as the pivotal change in the philosophy of psychology.

Previous efforts at trying to elucidate mental status depended on most of the so-called "arm chair research" methodology - effectively an opinion based system of reaching conclusions in which powerful ideas were defined by the popularity prowess of its thinker. In 1913, Watson published what is sometimes considered his most important work, the article "Psychology as the Behaviorist Views It"--sometimes called "The Behaviorist Manifesto." In this article, Watson outlined the major features of his new philosophy of psychology, called "behaviorism." The first paragraph of the article concisely described Watson's behaviorist position: Psychology as the behaviorist views it is a purely objective experimental branch of natural science. Its theoretical goal is the prediction and control of behavior. Introspection forms no essential part of its methods, nor is the scientific value of its data dependent upon the readiness with which they lend themselves to interpretation in terms of consciousness. In so doing, Watson's contribution stipulated that only empirically based data should be held as truth. That only Popperian-like falsifiable theories should be considered and that arm-chair research should be considered just that - an opinion. Text is available under the [Creative Commons Attribution-ShareAlike License](#).

Watson departed from one of the alleged founders of the entire field of psychology. Although in 1879 it was Wilhelm Wundt who founded the one of first formal laboratory for psychological research at the [University of Leipzig](#), and the first [journal](#) for psychological research in 1881, his introspective method to reach conclusions left much to be desired.

The behavior of man, with all of its refinement and complexity, forms only a part of the behaviorist's total scheme of investigation. The "manifesto" is notable for its lack of reference to specific principles of behavior. In 1913, Watson viewed [Ivan Pavlov's conditioned reflex](#) as being primarily a physiological mechanism controlling glandular secretions.

With his behaviorism, Watson put the emphasis on external behavior of people and their reactions on given situations, rather than the internal, [mental state](#) of those people. In his opinion, the analysis of behaviors and reactions was the only objective method to get insight in the human actions. As contemporary clinical neuropsychologists, the emphasis on current neuropsychological testing is on observable and measurable behaviors, not on potential introspective divagations.

Watson had four assumptions that involved behavioral radicalism. His first assumption was Evolutionary Continuism. This implied that laws of behavior applied to both humans and animals. Because of this we can study animals as simple models of complex human responses. The second assumption was called reductionism. This said that all behaviors can be linked to physiology. This means that we are biological organisms responding to outside influences. The third assumption is Determinism. This states that we don't act freely but rather we respond in a programmed way to outside stimuli. And last is Empiricism. This states that psychology should involve the study of observable (overt) behavior and not introspection or self-analysis.

It should be the mandate of psychological testing referrals to establish data points of empirically demonstrable behaviors, not the speculation of mental states or loosely constructed trait-based extrapolations from few alluded to signs or symptoms. Text is available under the [Creative Commons Attribution-ShareAlike License](#).

Eventually, Watson's penchant for strong theoretic thoughts would overshadow his science. He is famous for boasting, facetiously, that he could take any 12 [human infants](#), and by applying behavioral techniques, create whatever kind of person ("beggar man and thief") he desired. Naturally, he admitted that this claim was far beyond his means and data – noting, pointedly, that others had made similarly extravagant claims about the power of heredity over behavior for thousands of years. The quote, probably Watson's most well-known, reads:

"Give me a dozen healthy infants, well-formed, and my own specified world to bring them up in and I'll guarantee to take any one at random and train him to become any type of specialist I might select - doctor, lawyer, artist, merchant-chief and, yes, even beggar-man and thief, regardless of his talents, penchants, tendencies, abilities, vocations, and race of his ancestors. I am going beyond my facts and I admit it, but so have the advocates of the contrary and they have been doing it for many thousands of years. [Behaviourism (1930), p. 82]" Text is available under the [Creative Commons Attribution-ShareAlike License](#).

The last sentence is usually left out, making Watson's position appear more radical than it actually was. Watson had, in fact, done extensive ethological studies of the instinctive behavior of animals early in his career, particularly sea birds. Nevertheless, Watson strongly sided with nurture in the [nature versus nurture](#) discussion.

Contemporary psychologists vary significantly with regards to their nature vs. nurture theoretical orientations. Although it is outside of the scope of this commentary to delve into such a charged debate, it is relevant to indicate that psychological testing aims at first acknowledging and then altering human propensities independently of whether they are more heavily influenced by biological or learned factors. It is this clinician's opinion that in so doing, at its core, psychological testing covertly adheres to Watson's most controversial claim.

Kinds of Tests

Norm-referenced

Norms are statistical representations of a population. A norm-referenced test compares an individual's results on the test with the statistical representation of the population. In practice, rather than testing a population, a representative sample or group is tested. This provides a group norm or set of norms. One representation of norms is the **Bell curve** (also called "normal curve"). Norms are available for standardized psychological tests, allowing for an understanding of how an individual's scores compare with the group norms. Norm-referenced testing is used to assess characteristics, e.g., **MMPI**, achievement **Graduate Record Examination** (GRE), IQ/achievement tests. Text is available under the [Creative Commons Attribution-ShareAlike License](#).

IQ tests are measures of ability, while achievement tests are measures of the use and level of development of use of the ability. **IQ** (or cognitive) tests and **achievement tests** are common norm-referenced tests. In these types of tests, a series of tasks is presented to the person being evaluated, and the person's responses are graded according to carefully prescribed guidelines. After the test is completed, the results can be compiled and compared to the responses of a norm group, usually comprised of people at the same age or grade level as the person being evaluated. IQ tests which contain a series of tasks typically divide the tasks into verbal (relying on the use of language) and performance, or non-verbal (relying on eye-hand types of tasks, or use of symbols or objects). Examples of verbal IQ test tasks are vocabulary and information (answering general knowledge questions). Non-verbal examples are timed completion of puzzles (object assembly), making designs out of coloured blocks (block design). Text is available under the [Creative Commons Attribution-ShareAlike License](#).

IQ tests (e.g., **WAIS-III**, **WISC-IV**, **Cattell Culture Fair III**, K-BIT (Kaufman & Kaufman, 1990), Universal Nonverbal Intelligence Test) and academic achievement tests (e.g., WIAT, WRAT) are designed to be administered to either an individual (by a trained evaluator) or to a group of people (paper and pencil tests). The individually-administered tests tend to be more comprehensive, more reliable, more valid and generally to have better **psychometric** characteristics than group-administered tests. However, individually-administered tests are more expensive to administer because of the need for a trained administrator (**psychologist**, **school psychologist**, or **psychometrician**) and because of the limitation of working with just one client at a time.

Neuropsychological tests

These tests consist of specifically designed tasks used to measure a psychological function known to be linked to a particular **brain** structure or pathway. They are typically used to assess impairment after an injury or illness known to affect **neurocognitive** functioning, or when used in research, to contrast neuropsychological abilities across experimental groups.

Personality tests

Psychological measures of personality are often described as either **objective tests** or **projective tests**. Some projective tests are used less often today because they are more time consuming to administer. Objective tests (Rating scale). Text is available under the Creative Commons Attribution-ShareAlike License.

Objective tests have a restricted response format, such as allowing for **true** or **false** answers or rating using an ordinal scale. Prominent examples of objective personality tests include the **Minnesota Multiphasic Personality Inventory**, **Millon Clinical Multiaxial Inventory-III** (Millon, 1994), Child Behavior Checklist (Achenbach & Rescorla, 2001), and the **Beck Depression Inventory** (Beck & Steer, 1996). Objective personality tests can be designed for use in **business** for potential employees, such as the NEO-PI, the 16PF, and the Occupational Personality questionnaire, all of which are based on the **Big Five** taxonomy. The Big Five, or Five Factor Model of normal personality has gained acceptance since the early 1990s when some influential meta-analyses (e.g., Barrick & Mount 1991) found consistent relationships among the **Big Five personality factors** (Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism [OCEAN])

Projective tests (Free response measures)

Projective tests allow for a freer type of response. An example of this would be the **Rorschach test**, in which a person states what each of ten ink blots might be. The terms "objective test" and "projective test" have recently come under criticism in the Journal of Personality Assessment. The more descriptive "rating scale or self-report measures" and "free response measures" are suggested, rather than the terms "objective tests" and "projective tests," respectively.

As improved sampling and statistical methods developed, much controversy regarding the utility and validity of projective testing has occurred. The use of clinical judgment rather than norms and statistics to evaluate people's characteristics has convinced many that projectives are deficient and unreliable (results are too dissimilar each time a test is given to the same person).

However, many practitioners continue to rely on projective testing, and some testing experts (e.g., Cohen, Anastasi) suggest that these measures can be useful in developing therapeutic rapport. They may also be useful in creating inferences to follow-up with other methods. Possibly they have lingered in usage because they have a mystical and fascinating reputation, and are more attractive to uninformed people than answering objective tests, e.g., true/false questionnaires. The most widely used scoring system for the Rorschach is the **Exner system of scoring** (Exner & Erdberg, 2005). Another common projective test is the

Thematic Apperception Test (TAT; Murray, 1943), which is often scored with Drew Westen's (1991) Social Cognition and Object Relations Scales and Phebe Cramer's Defense Mechanisms Manual (1991, 2002). Both "rating scale" and "free response" measures are used in contemporary clinical practice, with a trend toward the former. Text is available under the Creative Commons Attribution-ShareAlike License.

Other projective tests include the House-Tree-Person Test, Robert's Apperception Test, and the Attachment Projective.

Direct observation tests

Although most psychological tests are "rating scale" or "free response" measures, psychological assessment may also involve the observation of people as they complete activities. This type of assessment is usually conducted with families in a laboratory, home or with children in a classroom. The purpose may be clinical, such as to establish a pre-intervention baseline of a child's hyperactive or aggressive classroom behaviors or to observe the nature of a parent-child interaction in order to understand a relational disorder. Direct observation procedures are also used in research, for example to study the relationship between intrapsychic variables and specific target behaviors, or to explore sequences of behavioral interaction.

The [Parent-Child Interaction Assessment-II](#) (PCIA; Holigrocki, Kaminski & Frieswyk, 1999) is an example of a direct observation procedure that is used with school-age children and parents. The parents and children are video recorded playing at a make-believe zoo. The [Parent-Child Early Relational Assessment](#) (Clark, 1999) is used to study parents and young children and involves a feeding and a puzzle task. The [MacArthur Story Stem Battery](#) (MSSB; Bretherton et al., 1990) is used to elicit narratives from children. The [Dyadic Parent-Child Interaction Coding System-II](#) (Eyberg, 1981) tracks the extent to which children follow the commands of parents and vice versa and is well suited to the study of children with [Oppositional Defiant Disorders](#) and their parents. Text is available under the Creative Commons Attribution-Share Alike License.

A General Testing Blueprint

When a referral by a pediatrician is made to a psychologist perhaps one of the most important benefits of the referral take place even before the psychologist has ever met or communicate with either the referral source or the referred patient. To identify the actual referral question is one of the most important matters to be established. Although in a significant percentage of the cases referred such a consideration is relatively easily identified, it may often require for the psychologist to contact the referral source in an effort to better elucidate the reasons for the referral. The reasons for neuropsychological testing can vary dramatically. Some of the common reasons for referring a patient to a neuropsychology service can be as follows:

- Diagnostic clarification. Pediatricians may easily recognize dysphoria or anxiety in a young child. Nevertheless, therapeutic recommendations may vary as a function of the type of depression. Is the child suffering from a reactive or from an endogenous depression?

- Identification of comorbidity. Is there a primary diagnosis that is being impacted by secondary or tertiary diagnoses (or vice versa).
- Corroboration of a previously unidentified learning disability.
- Establishment of the severity of the illness.
- Delineation of the specific preferred psychological treatment modality to be included in the treatment plan.
- Modification of the current psychopharmacological intervention.
- Assistance with social support networks and/ or social agencies such as the Department of Social Services, the Department of Mental Retardation, the Department of Mental Health, the Social Security Office, or even the Immigration and Naturalization Service.

Psychological testing can also take place in a variety of settings that often affects the referral question. A young child may be evaluated immediately after having undergone a surgical procedure that may have had an impact on his central nervous system. Status and severity of higher order thinking skills may be the main areas to investigate. Subsequently the same child may be assessed in order to determine either his or her emotional adjustment to the insult and/ or to secure the most appropriate educational environment given his or her current situation. Therefore, communication with the referring clinician and the establishment of a circumscribed referral question is a most essential first step.

The determination of this first step guides the type of testing, exams to be included, and feedback format (report writing style) following. Depending on the desired referral concern, the evaluating psychologist decides among three different kinds of examination batteries: the psychoeducational battery, the complete psychological battery, or the more specialized neuropsychological battery.

The Psychoeducational Battery

Long and unnecessary debates between clinical and school psychologists have recently surfaced within the assessment field regarding the thoroughness necessary to conduct an appropriate evaluation. After almost twenty years of practice and thousands of evaluations, in this clinician's opinion these discussions are mostly territorial and devoid of any clinical utility. The truth is that most school age children without an identifiable central nervous system insult only require a cursory review of most cognitive areas and a more thorough analysis of his/ her achievement profile. This battery will be complete with the following elements (this list is just my own and by no means is it meant to be inclusive of all possibilities, nevertheless, the reader will note that all exams are norm-referenced):

- Interview with either school personnel and/ or custodial caretaker
- Review of previous records and or previous testing
- Cognitive exam (provides the infamous IQ score)
 - o Wechsler
 - o Stanford Binet
- Achievement exam
 - o Woodcock Johnson (selected subtests)

It should be self-evident that the exams are to be administered in the language in which the student is most proficient. Among bilingual / bicultural children the language in which the exam is to be administered must be established via a thorough analysis of language dominance – We will try to explore this topic more extensively at another time.

The Psychological Battery

In addition to the components of the psychoeducational battery, this type of evaluation attempts to gain an understanding of the student / patient's behavioral and emotional functioning. Therefore, the following elements are necessary:

- Behavior Assessment Scales (BASC or Achenbach)
- Depression Inventory (Children's Depression Inventory)
- Anxiety Inventory (State Trait Anxiety Inventory)
- Rorschach Inkblots ONLY utilizing Exner's norm-referenced scoring system.

The reader will notice the exclusion of many projective exams whose reliability and validity has not been effectively established. The utilization of exams without the appropriate psychometric validation studies should be comparable to the common psychiatric practice referred to as off-label prescribing, i.e., its clinical validity may have been asserted but empirical data has not been obtained so as to be confident in the promotion of the practice.

The Neuropsychological Battery

In addition to ALL of the elements mentioned above, the neuropsychological battery specifically tries to answer a brain-behavior referral concern. The pertinent questions are too varied even to sample. There are dozens of neuropsychological exams ranging from the identification of a subtle phonological weakness to the differentiation to a specific type of memory disorder. More often differential matters such as whether a youngster has an attention disorder versus a learning disability are common referral concerns. Nevertheless, with regards to the additional exams to be included, the following are essential:

- Extended Developmental History Form
- Review of neuroimaging data
- Higher order thinking skills such as
 - o Attention (Continuous Performance Test)
 - o Memory (California Verbal Learning Test)
 - o Executive Skills (Behavior Rating Inventory of Executive Skills)
- Personality Assessment (Minnesota Multiphasic Personality Inventory)

In this clinician opinion, the most specialized assessments that are performed within the field should always be conducted within the context of a neuropsychological evaluation. Depending on the referral concern, such assessments can take different forms such a sexual

abuse evaluation, a fire-setter evaluation, and obviously the more typical custody and other forensic assessments.

Future Directions in Testing & Assessment

The field must continue to grow in its efforts to more accurately and reliably be able to perform differential diagnoses and therapeutic recommendations. Contemporary directions point very strongly to the inclusion of newer and economically feasible neuroimaging strategies in order to approximate such goals. The traditional relevant techniques of functional magnetic resonance imaging and / or positron emission tomography scanning remain outside both the economic feasibility and scope of practice for the average neuropsychologist. On the other hand, in recent years this clinician has been studying and exploring the applicability of a technique called quantitative electroencephalography (qEEG) as a potential addendum to the comprehensive neuropsychological evaluation. A future blog will illustrate the intricacies of this methodology while this clinician received training at the Boston Children's Hospital and at other conferences throughout the country. Although controversial, this promising technology attempts to better achieve that elusive goal of all clinical neuropsychology - the understanding of brain-behavior relationships.

Conclusions

Psychological testing offers pediatricians an essential amount of data that goes above and beyond basic well-child practices. As contributors to the pediatric service, psychologists have the opportunity to more comprehensively serve a population of health care consumers that seldom have an opportunity to advocate for themselves. Therefore, internal issues of quality control should emphasize the inclusion of norm-referenced exams that more accurately depict confident trends in development and discourage the utilization of non-validated assessment tools.

For a more scholarly but critical review and warnings on the pitfalls of inadequate psychological testing and assessment this clinician recommends the following book: Psychological Testing and American Society, 1890-1913 Book by Michael M. Sokal; Rutgers University Press, 1990. 208 pgs. It can be sampled at [this online location](#).

A most informative .pdf flyer can be [found by clicking here](#). This educational pamphlet is published by the Public Interest Advisory Committee, Division 40 (Clinical Neuropsychology), American Psychological Association. It can be copied and handed to parents that may have questions about the reasons for the evaluation and the referral process. It also educates and alerts them with regards quality control issues and to what should be expected from a good evaluation process.

Additional information on psychological testing can be obtained at the [National Academy of Neuropsychology](#) or at the [International Neuropsychological Society](#) websites. As always, thank you for letting me be of assistance

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