

## Using Objective Measures Prepares Psychologists for a Brain-Based Taxonomy

**T**HIS MONTH, I am excited to discuss a paradigm shift in psychology that will ultimately change the way we practice. From the beginning of my work in psychology, I have believed that objective measures are the key to advancing our profession. The advantages of using objective measures of success, such as physiological measures, include:

- They are not subject to reporting bias;
- They objectify results;
- They allow us to understand, classify, and predict outcomes;
- They facilitate the study of cognition.

For those of us providing VR-assisted exposure therapy, physiological measures:

- Provide more efficient exposure;
- Allow for uninterrupted exposure;
- Control the virtual environments;
- Provide a margin of safety;
- Enable us to study the effect of system parameters such as frame rate and method of display.

Psychological theory has evolved in an unusual way. In other scientific disciplines, the deductive method is used: it starts with a theory, makes deductions, and tests them. Psychological diagnoses and treatment evolved in an inductive fashion, in which researchers accumulated and integrated observationally based findings from lab and field studies to develop a theory. In most cases, the actual cause of a “mental disorder” was unknown. The result is that, today, comorbidities among disorders are common, as are “not otherwise specified” diagnoses. Current treatments may be necessary but are often insufficient for recovery.

When the Diagnostic and Statistical Manual of Mental Disorders (DSM) was created about 30 years ago, we knew very little about the structure and function of the brain. Now, the fields of psychology, neuroscience, and genetics are combining to enable us to work toward producing valid disease definitions.

At the forefront of this work are the Research Domain Criteria (RDoC), an important emerging initiative in the National Institute of Mental Health (NIMH) Strategic Plan. The goal of the RDoC is to create a neuroscience-based framework for studying mental disorders. Five common domains have been specified: negative emotionality, positive emotionality, cognitive processes, social processes, and emotional/regulatory systems. These are further divided into specific circuitry. Fear circuitry and executive functioning are examples of two functional domains where the relevant circuitry and behaviors seem relatively clear; other examples might include reward circuitry and frontostriatal circuits. Ultimately, the specification for each area will consist of a set of variables at different levels of analysis, such as genes, molecular/cellular mechanisms, behavior, and clinical measures.

Although the RDoC won't replace the DSM or International Classification of Diseases (ICD) any time soon, the World Health Organization (WHO) recently issued a solicitation to determine whether correspondence can be created between a clinically useful classification of mental disorders for global primary care and the RDoC typologies. The solicitation acknowledges that it is likely that a mix of models will be required to classify, diagnose, and shape management decisions for mental disorders.

RDoC-supported studies will take a non-conventional approach to selecting study samples. Rather than the usual diagnostic categories, participants will be selected based on common problems in a particular behavior or brain mechanism. For example, a study centered on an impulse control circuit in the front of the brain might span samples of people with substance abuse, Attention Deficit Hyperactivity Disorder (ADHD), impulsive aggression, and pathological gambling.

As the results of these studies are published over the next several years, I hope that, as clinicians and researchers, you will take note of this trend, replicate such research wherever feasible, and begin to incorporate objective measures of diagnosis and treatment into your work.

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