

# Diagnosis, Disorders and Decisions

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For more than six decades, the vast majority of mental health professionals have relied on the same handbook for classifying and diagnosing disorders of the mind—and for prescribing treatment. For that same period of time, the DSM (for Diagnostic and Statistical Manual, reissued in its fifth version last year) has been the target of harsh criticism, both scientific and political.

One recurring line of criticism holds that the manual focuses too much on superficial symptoms of mental disorders, ignoring the underlying dynamics. Instead of focusing on and naming clinical syndromes, critics say, the manual (and the field) ought to target the specific, disordered cognitive processes that underlie labels like depression and schizophrenia and alcoholism. The fact that mental disorders overlap so much, they add, is evidence that some of these mental and biological processes may cut across traditional illness categories.

A small but growing number of scientists and clinicians are breaking from traditional diagnosis, and trying instead to disentangle the basic mental processes that might contribute to illness. Among the leaders in this new field—known as “computational psychiatry”—are University of Pennsylvania psychological scientists Dahlia Mukherjee and Joseph Kable, who have been studying a very basic kind of decision making. Very little is known about how people with serious mental illnesses think about loss and gain and risk—or if their decisions are different from what’s considered normal thinking. It’s simply not been studied.

Until now. Mukherjee and Kable decided to zero in on what’s called “value-based decision making” because they were intrigued by evidence implicating the very same brain regions in both mental illnesses and in disordered decision making. Following this lead, they decided to run what’s called a meta-analysis—a statistical reanalysis of many existing studies to detect hidden patterns. They actually ran two such analyses, each comparing the decision making of the mentally ill with healthy controls.

All the studies used the Iowa Gambling Task, a standardized instrument for assessing decision making in ambiguous situations. Here’s how it works: Individuals choose cards from four decks, labeled A, B, C and D. C and D always produce moderate gains, and also moderate losses. Choices from A and B lead to much higher gains—but also steeper losses. Over time, choosing from A and B leads to a net loss, while choosing from C and D yields a net gain. Participants are unaware of these facts. They must learn, based on feedback, to maximize their gains.

Healthy participants typically do learn. By the end of the exercise, they are making more choices from the advantageous decks. The aim of the meta-analyses was to see if the mentally ill follow this pattern, or if their decision making is impaired. Mukherjee and Kable also wanted to see if people with different illnesses differ on this kind of decision making. They compared people with various illnesses to healthy controls and also to people with frontal brain lesions—a group known to have deficits on the gambling test.

The results were intriguing. As described in a paper to appear in the journal *Clinical Psychological Science*, the mentally ill showed a consistent but moderate deficit in value-based decision making—not as severe as the deficits resulting from brain damage, but significantly greater than normal. Just as interesting, there were no real differences from one kind of mental illness to another. That is, the observed deficit was common to all the subjects with a mental illness, suggesting a shared pathway. This is the first rigorous, quantitative study to verify that such decision making is impaired in mental illness.

The Iowa Gambling Task taps into many aspects of value-based decision making, so the findings provide a broad screen for decision making deficits related to mental illness. The next step—given the widespread deficits show here—is to identify more specific decision processes that are impaired in different disorders. Currently, the handbook of psychopathology barely mentions impaired decision making, but this could change as this emerging field begins to illuminate what’s awry, the next level down, is these vexing disorders.

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