



**Sylvia R. Karasu M.D.**  
The Gravity of Weight

# Holding a Mirror Up to "White Hat Bias" in Research

Mirror neurons, righteous zeal, and weight control

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“...human understanding is like a false mirror, which, receiving rays irregularly, distorts and discolors the nature of things by mingling its own nature with it.” Francis Bacon, *Novum Organum*, 1620

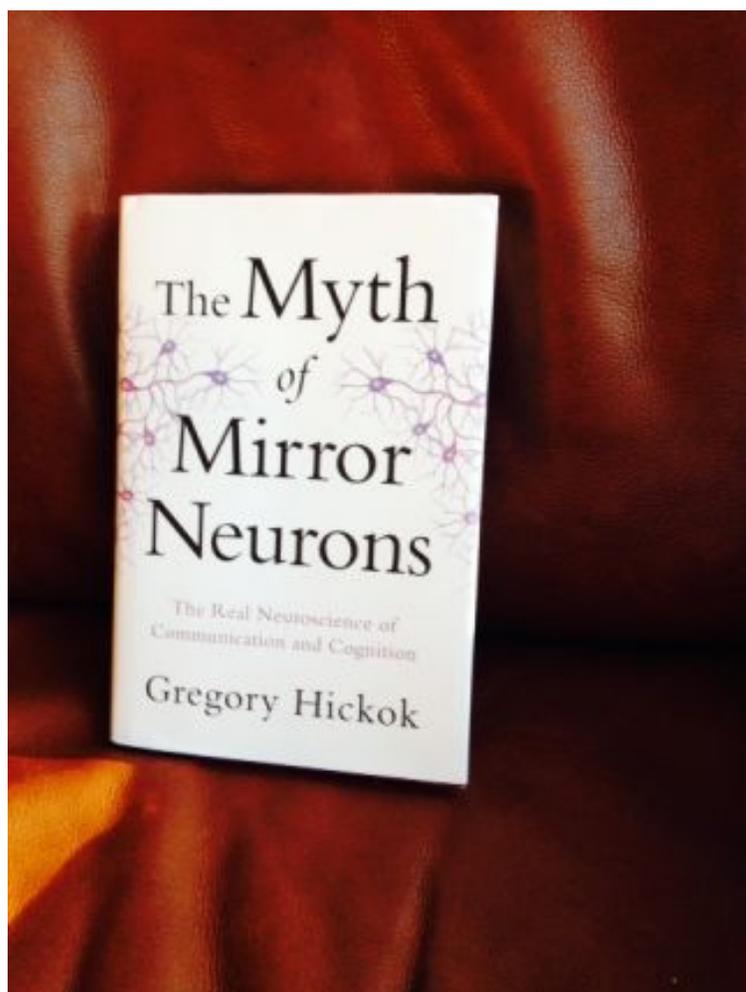
The Lone Ranger may have worn a black mask but his other characteristic, must-have accessory was his large-brimmed white hat, the mark of a hero in the old cowboy movies. It was this symbol of the classical Western hero of yore that led researchers Drs. Mark B. Cope and David B. Allison of the University of Alabama at Birmingham to label a specific kind of bias, “White Hat Bias,”

that they first identified in their review of the literature on obesity.

There are, of course, many potential sources of bias in scientific research, defined as any systematic error, as opposed to an error by chance—that can affect the design or implementation of a study. In fact, clinical epidemiologist and biostatistician Dr. David L. Sackett had identified over fifty different kinds, further subcategorized by the stage of research (e.g. conducting a literature review, selecting a sample population, measuring of exposures and outcomes, publishing of results, etc.), in his classic 1979 paper. For Sackett, bias was anything that “systematically deviates from the truth.”

Cope and Allison define “White Hat Bias” as “bias leading to distortion of information in the service of what might be perceived to be righteous ends.” In their 2010 papers in the *International Journal of Obesity*

(London) and *Acta Paediatrica*, these researchers explain this kind of bias can manifest itself in several ways, including misleadingly and inaccurately reporting data from scientific studies by “exaggerating the strength of the evidence.” It can also present in media press releases that distort, misrepresent, or even fail to present the facts of the actual research, particularly exaggerating claims of significance or application and failing to report any caveats or limitations. In their own articles, Cope and Allison focused on two examples they found in the obesity literature: the complexities and misrepresentation of research on the relationship of breast feeding to subsequent development of obesity in children and the role of sugar-sweetened beverages in contributing to the obesity epidemic. They note that 'White Hat Bias' can be either intentional or unintentional and can 'demonize' or 'sanctify' but regardless which way, presents a bias "sufficient to misguide readers."



Source: photo taken by Sylvia R. Karasu, M.D.

I was reminded of Cope's and Allison's papers after reading Dr. Gregory Hickok's fascinating new book, *The Myth of Mirror Neurons*. Mirror neurons were originally discovered by a group of Italian researchers in the 1990s in a specific area (F5) of the brains of macaque monkeys. Their special property was that they were active (i.e., fired) not only when a monkey performed an activity but when a monkey saw the examiner performing an activity. From these original animal experiments sprang an entire avalanche of speculation about the potential importance of mirror neurons for humans. They captured the imagination not only of researchers (e.g. called by one “the neurons that shaped civilization”) but also of the media and were even dubbed at one point in *The New York Times* as “cells that could read minds.” Over subsequent years, they were misleadingly and inaccurately presented as the neurons that are responsible for what makes us human, including our ability to empathize with others. Ironically, until recently, their existence in humans was not even established but this did not stop the media and

even some in the scientific community to link mirror neurons and their dysfunction with autism (i.e., the so-called “broken mirror theory”), schizophrenia, and even the complex relationship between patient and therapist in psychotherapy. The hype that surrounded mirror neurons, particularly the exaggerated claims of significance and application in both the scientific literature as well as in the media press releases, without

hard data to support their claims, but with potentially righteous intentions, seemed a clear example of Cope's and Allison's "White Hat Bias."

Eventually, though, researchers began to appreciate that mirror neurons and brain functioning are far more complex. In his new book, Hickok systematically and quite even-handedly delineates eight enormous problems—"anomalies," including evidence from neurological disorders, as well as noting that we have the ability to understand actions, such as playing a sport or a musical instrument, that we cannot necessarily perform ourselves—with the theory and its application. The hype, incidentally, led to mirror neurons being associated with everything from love, smoking, aesthetic response to music, spectator sport appreciation, and yes, even to obesity! For example, Hickok cites a paper by Deborah A. Cohen (2008) from the journal *Diabetes* in which Cohen describes "neurophysiological pathways to obesity" and states in her *Abstract*, among ten pathways, that mirror neurons "*cause* (my emphasis) people to imitate the eating behavior of others without awareness." In the body of the paper, she further notes that mirror neurons "could be the mechanism through which "obesity is contagious in social networks." Cohen adds, "Although the existence of mirror neurons is not new, in the current environment, they can serve as a mechanism to amplify increases in energy consumption..." The point here is Cohen's language is unfortunately misleading and in her presumably righteous zeal to explain at least one contribution to the burgeoning obesity epidemic, expands her deductions far beyond what the data from the research can support.

Bottom line: As Francis Bacon said, human understanding is like a false mirror. So let the reader of obesity literature beware! Be sure to hold that mirror up to scientific scrutiny!

Statue of Francis Bacon at Royal Academy of London



Human understanding is like a false mirror, said Francis Bacon.

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## About the Author



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**In Print:** *The Gravity of Weight: A Clinical Guide to Weight Loss and Maintenance*

**Online:** my own website

