

Commentary: Describing Differences—Possibilities and Pitfalls

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Reports of attempts to investigate, characterize, compare, and contrast those who are mentally ill fill the literature and invite controversy. It seems to be part of human nature to reestablish and define the differences between us. Creative descriptive studies continually challenge our perspective, yet they must be balanced with thoughtful consideration of possible selection bias, an understanding of how a perspective may influence a particular view, and an appreciation of statistical constraints, before describing differences as predictive risk factors.

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Such a disease, which disorders the senses, perverts the reason, and breaks up the passions in wild confusions;—which assails man in his essential nature,—brings down so much misery on the head of its victims, and is productive of so much social evil—deserves investigation on its own merits, by statistical as well as other methods.—William Farr [Ref. 1, p 1]

For ages, man has been both fascinated and repulsed by persons who are considered mentally ill. The literature regarding attempts to investigate, characterize, compare, and contrast those who are “mentally ill” fills libraries and invites controversy. How different are the mentally ill? Are they more or less like us? Are they like us, but disabled in particular realms? A former anthropology professor insisted, even while drawing comparisons or contrasts during courses in physical anthropology or cultural anthropology, that no matter how many differences are found, human beings in the end are always more alike than different. That professor’s admonition came to mind as I read Matejkowski *et al.*,² a creative, descriptive study of 95 convicted murderers with “a recorded diagnosis of severe mental illness (i.e., a lifetime clinical diagnosis of schizophrenia or other psychotic disorder, major depression, mania, or bipolar disorder)” (Ref. 2, p 76). Rather than portraying this population from the vantage point of having a severe mental illness, they began with an original cohort of 723 persons, all of whom had been sentenced to Indiana state prisons for the crime of murder. This original

cohort was further winnowed down to 518 offenders, all of whom had been convicted of murder in Indiana between 1990 and 2002. Of these 518, the 95 who had a recorded diagnosis of severe mental illness were further analyzed by using an extensive range of variables examining the personal, situational, clinical, and legal domains. The convicted murderer with a recorded diagnosis of severe mental illness was ultimately described as having “a mood disorder, being white and male with a high school education or equivalent, living in stabilized housing, and, to a lesser degree, having significant intimate and familial relationships” (Ref. 2, p 81). This description may portray some of my neighbors or family members—a description more like than unlike persons whom I may know. The question then becomes, how different is this particular cohort? To find that answer, the authors surveyed a wide range of studies characterizing other mentally ill persons who had committed acts of nonlethal violence, psychotic murderers, and murderers who were hospitalized rather than imprisoned in the United States and other countries. They then compared their cohort to the ones in these studies. They found that while some of their results were consistent with those in the other studies, they specifically noted that their findings offered a more complete description of murderers who were severely mentally ill. In addition, the authors found that the murders were usually committed in anger or rage by offenders who used a firearm or sharp object and that the perpetrators were usually in an intimate or a familial relationship with the victims.

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Even if, as my former professor maintained, we are more alike than different, it seems to be part of human nature to try to establish and define the differences between us. But in defining differences, one must consider possible biases and the influence of a particular perspective. When a mentally ill person commits murder, the inevitable questions include, “Are people with mental illness really more likely than others to engage in violent behavior? If so, which psychiatric illnesses are associated with violence, and what is the magnitude of the increase in risk?” (Ref. 3, p 2064). Friedman noted that these types of questions were always raised when psychotic patients attack. He specifically explored these questions two months after the murder of Wayne Fenton, a prominent expert in schizophrenia and an associate director at the National Institute of Mental Health, by a 19-year-old patient. He noted how one national survey “showed that the lifetime risk of schizophrenia was 5 percent among people convicted of homicide—a prevalence that is much higher than any published rate of schizophrenia in the general population” (Ref. 3, p 2065). This study suggests that there is an association between schizophrenia and a homicide conviction, but Friedman specifically points out that focusing on subjects who are arrested, incarcerated, or hospitalized generates a selection bias that limits the ability of the study to be generalized to psychiatric patients in the population.³ Similarly, because of the focus on incarcerated convicted murderers, a selection bias may limit any generalizations about white men with mood disorders who live next door. Friedman cited an additional study that found that among 802 adults with a psychotic or a major mood disorder, “violence was independently correlated with several risk factors, including substance abuse, a history of having been a victim of violence, homelessness and poor medical health” (Ref. 3, p 2065). While 72 percent of the convicted murderers in Matejkowski *et al.*² had a history of drug abuse, and 45 percent were abused as children, 88 percent were not homeless. Therefore, contingent on the study and the perspective of a particular author, persons with mental illness may be described as possessing a variety of risk factors that may be associated with violence. In the end, violence, even specifically murder, by persons with mental illness probably results because of multiple variable risk factors.

Forensic psychiatry experts are often called on to give an opinion on how risk factors should be taken

into account. How should clinical factors be weighted to determine competency, possible suicide risk, or dangerousness? Clinicians and experts are asked to utilize clinical and risk factors to give an opinion regarding prognosis. Matejkowski *et al.* caution that their descriptive study did not “ascertain risk factors for murder among persons with severe mental illness” (Ref. 2, p 84), yet they express hope that future analysis will be able to do so.

“The identification of new risk factors for specific diseases is an enduring theme in medical research” (Ref. 4, p 2615) is the opening sentence in a paper by Ware, a professor of biostatistics at the Harvard School of Public Health, who adroitly analyzes and critiques an article that attempts “to identify biomarkers that contribute to prediction models for death from any cause and major cardiovascular events after controlling for a set of established risk factors” (Ref. 4, p 2616). He uses a “simple example,” and multiple statistical tools to underscore how much stronger an association a risk factor must have with an outcome than is ordinarily seen in etiologic research if it is to become predictive for an individual. Ware concludes by noting that it is a complex pathway that leads to chronic disease and death and that much work is needed before biomarkers “can provide a basis for prognostic evaluation of the individual patient” (Ref. 4, p 2617). Similarly, forensic psychiatrists and other professionals who deal with the mentally ill must be extremely cautious before allowing the risk factors to define and predict possible acts of the mentally ill.

If risk factors do not have sufficient power to define or predict possible acts of the mentally ill, perhaps other technology can be used to compare, contrast, and ultimately foretell their behavior. In a *Boston Legal* episode, the characters Whitney Rome and Katie Lloyd defend a former cop charged with murder. The district attorney plans to use a functional MRI as evidence to prove that the accused is a racist.⁵ Admittedly, *Boston Legal* pushes legal, along with other, boundaries, yet the concept of using functional MRI in the area of neurolaw is gaining traction. (“Neurolaw is an emerging field of study that seeks to explore the effects of discoveries in neuroscience on law and legal standards.”⁶) Jeffery Rosen⁷ identified a little-known case from the early 1990s that may mark the moment when neuroscience began to influence the American legal system. Herbert Weinstein, a 65-year-old advertising executive, was charged with strangling his wife Barbara. He had

thrown her body out of their 12th floor apartment on East 72nd Street in Manhattan to disguise the murder as a suicide. His defense before the trial began was that he was not responsible for his actions because of a physical defect, a cyst in his arachnoid membrane. The state argued that the evidence of Weinstein's arachnoid cyst should not be admitted. Daniel Martell, a forensic psychologist, testifying for the prosecution, stated that "brain scanning technologies were new and untested, and their implications [aren't] yet widely accepted by the scientific community" (Ref. 7, p 50). On October 8, 1992, Judge Richard Carruthers ruled that Weinstein's attorneys could inform the jury that a brain scan had identified an arachnoid cyst, but no mention could be made that arachnoid cysts are associated with violence. On the morning of jury selection, 11 days later, the prosecution agreed to let Weinstein plead guilty to a reduced charge of manslaughter. Obviously, "by its nature as a visual medium, a brain image is a compelling presentation of data" (Ref. 8, p 95), and in this case the prosecution seemed reluctant to allow its use.

There is a host of brain-imaging technology and wide-ranging neuroscience research, with both the techniques themselves and the associated research generating an enormity of data that may be used and abused by both science and the law. Consider how Matejkowski *et al.*² described their cohort of convicted murderers as primarily having a mood disorder and that rage or anger was the motive most often given. Compare those descriptive findings with the results of a positron emission tomography study that compared the glucose metabolism of control subjects to both predatory and affective murderers, concluding that

. . . affective murderers relative to comparisons had lower left and right prefrontal functioning, and lower right hemisphere prefrontal/subcortical ratios. In contrast, predatory murders had prefrontal functioning that was more equivalent to comparisons [control subjects]. . . Results support the hypothesis that emotional, unplanned impulsive murderers are less able to regulate and control aggressive impulses . . . [Ref. 9, p 319].

Consider another study involving the use of single photon emission computed tomography, in which the authors explored differences in regional cerebral blood flow between impulsive murderers and healthy comparison subjects and in which the results "indicate that nonemotionally laden stimuli may result in frontotemporal dysregulation in people predisposed to impulsive violence" (Ref. 10, p 304). These studies are attempts to differentiate murderers and in doing so, to enable better understanding of important influences on criminal behavior. The creative exploration of human differences must be balanced with thoughtful consideration of inherent selection bias when comparing groups, an understanding of how perspective influences a particular view, and an appreciation of statistical constraints before describing risk factors as predictive. And finally, we must remember "that most people who are violent are not mentally ill and most who are mentally ill are not violent" (Ref. 3, p 2066).

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