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Rethinking Risk Assessment

THE MACARTHUR STUDY OF MENTAL DISORDER AND VIOLENCE

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PREFACE

Despite enormous advances in the diagnosis and treatment of mental disorder in recent decades, the social stigma associated with having a mental disorder remains great. Why is this so? According to the Surgeon General's first Report on Mental Health (1999), "The answer appears to be fear of violence: people with mental illness, especially those with psychosis, are perceived to be more violent than in the past" (p. 7). This perception has become a driving force—often *the* driving force—in mental health law and policy in the United States and throughout the world.

This book addresses the violence that people with mental disorder sometimes engage in. More specifically, it addresses how that violence can be anticipated, the first step toward prevention. Our goal is to offer mental health professionals a clinical tool that can improve both the accuracy and the efficiency of the violence risk assessments that they are increasingly called on to make. We believe that judges, lawyers, and legal scholars also will find our substantive conclusions of interest and that researchers will find our methods to be innovative and to be useful in other contexts as well.

We review in this book a great deal of recent research on a wide array of variables claimed to be risk factors for violence. We focus most heavily, however, on one study, the MacArthur Violence Risk Assessment Study. This book brings together and integrates all of the recently published results of that project and includes findings presented for the first time.

The Violence Risk Assessment Study was the largest of three major em-

pirical thrusts of the MacArthur Research Network on Mental Health and the Law. A second emphasis concerned the competence of people with mental disorder to make decisions regarding their mental health treatment (e.g., Grisso & Appelbaum, 1998) or the adjudication of criminal charges against them (e.g., Otto, Poythress, Nicholson, Edens, Monahan, Bonnie, Hoge, & Eisenberg, 1998). A final concern dealt with the role played by coercion in the administration of mental health services (e.g., Lidz, Hoge, Gardner, Bennett, Monahan, Mulvey, & Roth, 1995). In addition, the Network supported more circumscribed work on violence risk communication (e.g., Slovic, Monahan, & MacGregor, 2000) and on work disability and the law (Bonnie & Monahan, 1997). A complete list of the Network's research can be found on its website, http://macarthur.virginia.edu/

The Violence Risk Assessment Study was supported by the John D. and Catherine T. MacArthur Foundation and by National Institute of Mental Health grant R01 49696. The Study was nurtured at every step by the remarkably capable and supportive staff of the MacArthur Foundation: Laurie Garduque, Robert Rose, Idy Gitelson, and Ruth Runeborg. Denis Prager and William Bevan played key roles in the study's early stages.

We are deeply indebted to the other members of the Research Network on Mental Health and the Law, including Shirley S. Abrahamson, Richard J. Bonnie, Pamela S. Hyde, Stephen J. Morse, Paul Slovic, and David B. Wexler, for their insights on every phase of the research. We thank Seth Leon, Nan Brady, and, especially, Roumen Vesselinov, for their significant contributions in data management and analysis. A draft of this book was carefully reviewed by Renée Binder, Joel Dvoskin, Stephen Hart, and Kirk Heilbrun. The book is better for their insights.

We also gratefully acknowledge the contributions of William O'Connor, Ph.D., and Deirdre Klassen, Ph.D., as the site directors in Kansas City, as well as the site coordinators, research clinicians, and field interviewers at each of the three data collection sites: Kimberly Ackerson, Ph.D., Tamara Anderson, Bruce Dembling, Ph.D., Carolyn Hill-Fotouhi, M.A. Jan Meymaris, Dawn O'Day, and Kim Trettel Smith, M.A., in Worcester; Jennifer King, Ray Milke, Debra Murray, Lorrie Rabin, Ph.D., Chelsea Ruttenburg, Carol Schubert, M.P.H., and Esther VonWaldow, M.S.W. in Pittsburgh; and Julie Applegate, Ph.D., Ron Dancy, Heather Fitz-Charles, Lisa Johnson-Sharpe, Ph.D., Lisa Kuhn, Susan Kuntz, Walter Janzen, M.A.,

Brian Lindhardt, M.A., Becca Matthews, Lisa Rogers, Melba Small, Aileen Utley, Ph.D., and Rick Wright in Kansas City.

Much more may be learned from the rich information on mental disorder and violence that we have assembled in the MacArthur Violence Risk Assessment Study. The complete data set has been archived and is available to researchers free of charge. See the Network's website for information on how to access it.

Charlottesville, Va. J. M.

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VIOLENCE RISK ASSESSMENT: THE LAW AND THE SCIENCE

Beliefs about the causes of mental disorder have changed over the centuries, but the belief that mental disorder predisposes many of those suffering from it to behave violently has endured. Indeed, this belief appears to have increased in intensity in the past several decades, despite many educational campaigns designed to allay public apprehension (Phelan, Link, Stueve, & Pescosolido, 2000). The more a member of the general public believes that mental disorder and violence are associated, the less he or she wants to have an individual with a mental disorder as a neighbor, friend, colleague, or family member (Link, Phelan, Bresnahan, Stueve, & Pescosolido, 1999b).

These perceptions are reflected both in formal policies toward people with mental disorders and in the public's expectations about the role of mental health professionals in ensuring the safety of the community. Violence risk assessment now is widely assumed by policy makers and the public to be a core skill of the mental health professions and plays a pivotal role in mental health law throughout the world.

Before the late 1960s, commitment to psychiatric facilities was justified primarily by a paternalistic concern for people who were seen to be "in need of treatment." Beginning in the late 1960s, however, public protection began to dominate as a rationale for commitment, and risk of behavior harmful to others—called "dangerousness" in statutes and court decisions—became a primary focus of clinical and legal attention (Appelbaum, 1988, 1994). Despite a refocusing of standards in a few jurisdictions to reemphasize the more

diffuse "mental or physical deterioration" that disorder can precipitate, risk of physical harm has remained firmly embedded in mental health law as a prime rationale for various forms of involuntary intervention. For example, the American Psychiatric Association's Model State Law on Civil Commitment (1983), based heavily on the work of Stone (1975), follows Roth (1979) in explicitly contemplating the commitment to a mental hospital of several types of people with mental disorder, including those "likely to cause harm to others."

More recently, the American Bar Association's *National Benchbook on Psychiatric and Psychological Evidence and Testimony* (1998) stated that courts rely on information in the form of clinical risk assessments when making decisions regarding institutionalization "because courts are ultimately responsible for making these decisions and though the information may remain open to challenge, it is the best information available. The alternative is to deprive fact finders, judges and jurors of the guidance and understanding that psychiatrists and psychologists can provide" (p. 49).

It is not only as a standard for involuntary hospitalization that risk of violence is a cornerstone issue in mental health law. Involuntary outpatient commitment statutes frequently include "dangerousness" as a commitment standard (Swartz, Swanson, Wagner, Burns, Hiday & Borum, 1999). Less legally formal procedures for "community supervision and monitoring" and for the intensive administration of community-based mental health services are also often predicated on a perceived risk of violence (Dennis & Monahan, 1996). In addition, discharge from forensic hospitals after a finding of not guilty by reason of insanity is almost always contingent on a prediction that violence is unlikely to occur (Steadman, McGreevy, Morrissey, Callahan, Robbins, & Cirincione, 1993; Silver, 1995). Finally, the imposition of tort liability on mental health professionals who negligently fail to anticipate and avert a patient's violence to others has become commonplace in many jurisdictions (Monahan, 1993; Gutheil & Appelbaum, 2000).

CLINICAL RISK ASSESSMENT: OUTCOMES

None of the laws and policies just described is predicated on the assumption that *all* people with mental disorder will be violent. Rather, they are prem-

ised on the belief that some people with mental disorder will be violent and others will not, and, furthermore, on the expectation that mental health professionals can distinguish with a reasonable degree of accuracy between "dangerous" and "nondangerous" cases of mental disorder (Monahan, 2000a; Mossman, 2000; Mullen, 1997, 2000); and therein has long lain the rub.

Early research on the accuracy of clinicians at predicting violent behavior to others was reviewed by Monahan (1981). Five studies (Kozol, Boucher, & Garofalo, 1972; Steadman & Cocozza, 1974; Cocozza & Steadman, 1976; Steadman, 1977; Thornberry & Jacoby, 1979) were available as of the late 1970s. The conclusion of that review was that

> psychiatrists and psychologists are accurate in no more than one out of three predictions of violent behavior over a several-year period among institutionalized populations that had both committed violence in the past (and thus had high base rates for it) and who were diagnosed as mentally ill. (p. 47)

Only two studies of the validity of clinicians' predictions of violence in the community have been published since that time (for reviews, see Blumenthal & Lavender, 2000; Monahan, 2000b). Sepejak, Menzies, Webster, & Jensen (1983) studied court-ordered pretrial risk assessments and found that 39% of the defendants rated by clinicians as having a "medium" or "high" likelihood of being violent to others were reported to have committed a violent act during a 2 year follow-up period compared with 26% of the defendants predicted to have a "low" likelihood of violence (p. 181, note 12), a statistically significant difference, but not a large one in absolute terms.

More recently, Lidz, Mulvey, & Gardner (1993) took as their subjects male and female patients being examined in the acute psychiatric emergency room of a large civil hospital. Psychiatrists and nurses were asked to assess potential patient violence to others over the next 6 month period. Patients who elicited professional concern regarding future violence were more likely to be violent after discharge (53%) than were patients who had not elicited such concern (36%). The accuracy of clinicians' predictions of violence by male patients, but not by female patients, significantly exceeded chance levels. (For important studies assessing risk of violence within inpatient mental health facilities, see McNiel & Binder [1994] and McNiel, Sandberg, & Binder [1998]).

CLINICAL RISK ASSESSMENT: PROCESS

Mulvey and Lidz (1985) have argued that to study the *outcome* of clinical prediction before studying the *process* of clinical prediction is to "put the cart before the horse" (p. 213). They stated that

> it is only by knowing "how" the process occurs that we can determine . . . the strategy for improvement in the prediction of dangerousness. Addressing this question requires systematic investigation of the possible facets of the judgement process that could be contributing to the observed low predictive accuracy. (p. 215)

Along these lines, Segal, Watson, Goldfinger, and Averbuck (1988a, b) observed clinicians evaluating over 200 cases at several psychiatric emergency rooms. Observers coded each case on an 88 item index called Three Ratings of Involuntary Admissibility (TRIAD). Global ratings of patient "dangerousness" were completed by each clinician. The TRIAD scores correlated highly with overall clinical ratings of dangerousness.

> Symptoms most strongly related to [clinical judgments of] danger to others in our sample were irritability and impulsivity, but there were also consistent moderate associations with formal thought disorder, thought content disorder, and expansiveness as well as weaker but consistent significant correlations with impaired judgment and behavior and inappropriate affect. (1988b, p. 757)

Similarly, Menzies and Webster (1995) studied the clinical decision making process regarding risk for a large group of Canadian mentally disordered offenders. They concluded that "previous violence, alcohol use, presentation of anger and rage, lack of agreeability, and tension during the interviews were the main contributors to the resulting decisions" (p. 775).

In the research program of Mulvey and Lidz (e.g., Mulvey & Lidz, 1985; Lidz, Mulvey, Apperson, Evanczuk, & Shea, 1992), observers trained in speedwriting recorded interviews between clinicians and patients admitted to a hospital's psychiatric emergency room. Clinicians later completed ratings of current and chronic dangerousness in the community. Although a patient's history of violence was the best predictor of clinician ratings, patient hostility and the presence of serious disorder also correlated highly with

clinical ratings of current dangerousness. In addition, explicit judgments of the likelihood of future violence were rarely found in actual practice, with this conclusion instead embedded in other decisions about clinical care.

CHOOSING A RESEARCH STRATEGY

Because of the central importance of violence in mental health law and policy throughout the world, and because the state of the science on which those laws and policies rested was so shaky, the MacArthur Research Network on Mental Health and the Law, when it was planning its research agenda in the late 1980s, had little difficulty in choosing violence risk assessment as a core concern. But how best to proceed? More research demonstrating that the outcome of unstructured clinical assessments left a great deal to be desired seemed to be overkill: That horse was already dead. On the other hand, systematic studies unpacking the process by which clinicians made estimates of violence risk were already in progress (e.g., Mulvey & Lidz, 1985), and there was no need to duplicate them. Ultimately, the Network—like others working independently around the same time (e.g., Harris, Rice, & Quinsey, 1993; Webster, Douglas, Eaves, & Hart, 1995)—decided that the way forward in improving risk assessment for community violence was likely to lie not in directly addressing the process of clinical judgment at all, but rather in developing an evidence-based actuarial tool that would inform that judgment.

ACTUARIAL RISK ASSESSMENT

The general superiority of statistical over clinical risk assessment in the behavioral sciences has been known for almost half a century (Meehl, 1954; Grove, Zald, Lebow, Snitz, & Nelson, 2000; Swets, Dawes, & Monahan, 2000). Despite this, and despite a long and successful history of actuarial risk assessment in bail and parole decision making in criminology (Champion, 1994), there have been only a few attempts to develop actuarial tools for the specific task of assessing risk of violence to others among people with mental disorder (for reviews, see Monahan & Steadman, 1994; Borum, 1996;

Douglas, Cox, & Webster, 1999). For example, Steadman and Cocozza (1974), in an early study of mentally disordered offenders, developed a Legal Dangerousness Scale based on the presence or absence of a juvenile record and a conviction for a violent crime, the number of previous incarcerations, and the severity of the current offense. This scale, along with the patient's age, was significantly associated with subsequent violent behavior. Likewise, Klassen and O'Connor (1988a) found that the combination of a diagnosis of substance abuse, prior arrests for violent crime, and young age were significantly associated with arrests for violent crime among male civil patients discharged into the community.

More recently, the Violence Risk Appraisal Guide (VRAG) (Harris et al., 1993; Quinsey, Harris, Rice, & Cormier, 1998; Rice & Harris, 1995b) was developed from a sample of over 600 men from a maximum-security hospital in Canada. All had been charged with a serious criminal offense. Approximately 50 predictor variables were coded from institutional files. The criterion was any new criminal charge for a violent offense, or return to the institution for a similar act, over a time at risk in the community that averaged approximately 7 years after discharge. A series of regression models identified 12 variables for inclusion in the VRAG, including the Hare Psychopathy Checklist—Revised, elementary school maladjustment, and age at the time of the offense (which had a negative weight). When the scores on this actuarial instrument were dichotomized into "high" and "low," the results were that 55% of the group scoring high committed a new violent offense compared with 19% of the group scoring low.

Finally, and most recently, Douglas and Webster (1999) reviewed ongoing research on a structured clinical guide that can be scored in an actuarial manner to assess violence risk, the "HCR-20," which consists of 20 ratings addressing *H*istorical, *C*linical, or *R*isk management variables (Webster et al., 1995). Douglas and Webster also reported data from a retrospective study with prisoners, finding that scores above the median on the HCR-20 increased the odds of past violence and antisocial behavior by an average of four times. In another study with civilly committed patients, Douglas, Ogloff, Nicholls, and Grant (1999) found that during a follow-up period of approximately 2 years after discharge into the community, patients scoring above the HCR-20 median were 6 to 13 times more likely to be violent than were patients scoring below the median.

THE EVOLUTION OF THE MACARTHUR VIOLENCE RISK ASSESSMENT STUDY

For the reasons just given, we were convinced, as we began to plan the MacArthur Violence Risk Assessment Study, not only of the importance to mental health law and policy of improving the validity of violence risk assessment but also that the path to achieving this goal lay in an actuarial direction (cf. Buchanan, 1999). We had two core goals: to do the best "science" on violence risk assessment possible and to produce a violence risk assessment "tool" that clinicians in today's world of managed mental health services could actually use. From these initial intellectual commitments, our thinking evolved in stages over the decade it took to plan, execute, and analyze the research. These stages are described in detail in the subsequent chapters of this book, and we briefly introduce them here as a roadmap of what is to follow.

IDENTIFYING GAPS IN METHODOLOGY

As we reviewed the existing studies that had attempted to statistically relate given risk factors or combinations of risk factors to violent behavior among people with mental disorder, we came to the conclusion that almost all suffered from one or more methodological problems: They considered a constricted range of risk factors, often a few demographic variables or scores on a psychological test; they employed weak criterion measures of violence, usually relying solely on arrest; they studied a narrow segment of the patient population, typically males with a history of prior violence; and they were conducted at a single site (The studies and their methodological difficulties were reviewed in detail by Monahan & Steadman [1994].) Based on this critical examination of existing work, we initially set out to design a piece of research that could, to the greatest extent possible, overcome the methodological obstacles we had identified. We would study a large and diverse array of risk factors. We would triangulate our outcome measurement of violence, adding patient self-report and the report of a collateral informant to data from official police and hospital records. We would study both men

and women, regardless of whether they had a history of violence; and we would conduct our study at several sites rather than at a single site.

SELECTING PROMISING RISK FACTORS

It is one thing to want to study a large and diverse array of risk factors. It is another to choose which specific risk factors to study. Although we lacked any comprehensive theory of violence by people with mental disorder from which we could derive hypothesized risk factors (see Reiss & Roth [1993] on the absence of such a theory), recent studies suggested a number of variables that might be potent risk factors for violence among people with a mental disorder. Among those variables were psychopathy, anger, delusions, hallucinations, diagnosis, gender, violent thoughts, child abuse, prior violence, and contextual variables (Monahan & Steadman, 1994). We chose what we believed to be the best of the existing measures of these variables and, when no instrument to adequately measure a variable was available, we commissioned the development of the necessary measure.

From the beginning, we knew it was naive to think that one or a small number of risk factors could accurately predict violence. Like virtually all existing violence risk assessment researchers, we tried to combine many risk factors using a main effects regression model. The results achieved with this standard statistical technique were not, however, appreciably better than those that others had obtained using far less elaborate (and costly) data-collection procedures. The use of a main effects regression model, on reflection, seemed to imply that the effect of particular risk factors on the occurrence of violence is the same for all people with mental disorder. Such a model did not capture the richness of the relationships we were observing among risk factors as they related to violence. We began to take a different analytic tack.

USING TREE-BASED METHODS

Drawing from new work by Gardner, Lidz, Mulvey, and Shaw (1996a, b), we developed violence risk assessment models based on classification tree rather than linear regression methods. A classification tree approach reflects