1999

Predicting Interpersonal Violence Among the Mentally Ill Population

Sidney Shapiro

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Sidney Shapiro

Barry University

May, 1999

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Preface

Historically, a dichotomy has existed between public and scholarly opinion on whether or not any association exists between mental illness and violence. Public opinion has maintained such a relationship exists. Social scientists and consumer advocates have questioned or denied any connection, believing the best indicator of future violence or criminal violent activity is a person's previous history of violence or criminal violent activity. Recent epidemiologic (prevalence), clinical (judgement) and actuarial (statistical) surveys, employing more advanced methodology than earlier research, suggest evidence linking mental disorder and violence. Key research questions under examination have been: Is there a relationship between mental disorder and violence? Is mental disorder an empirically verifiable risk factor for the occurrence of violence? Is there a way to differentiate between people with mental disorders who will be violent from those who will not be violent? Related examination of these concerns is ongoing in the areas of mental health law and policy, and in moral, ethical and political arenas. Concomitant understanding and integration of the most current research on the prediction of interpersonal violence and its practice implications are essential for social workers engaged with violent or potentially violent clientele, potential or actual victims, family members of potentially or actually violent persons, and other professionals. With the direct and indirect practice needs of social workers in focus, this paper reviews the literature, theory, and research on interpersonal violence among the mentally ill population.

Chapter 1

PREDICTING INTERPERSONAL VIOLENCE AMONG THE MENTALLY ILL POPULATION

Introduction

Violence is a subject broad in its scope and parameters. A review of Social Work Abstracts of the years 1977 to 1992 by Bryant (as cited in Van Soest & Bryant, 1995) found 425 articles on violence, with social work journals publishing 141. The predominant theme by the social work researchers in a majority of the articles was on family violence (e. g., battered women, abusive men, child abuse and neglect). In contrast, the general public's interest was focused on "street and handgun violence," with particular attention to youth on youth, racial, ethnic, and interpersonal violence. Van Soest and Bryant question whether "social work failed to critically assess the situation" and has an "inadequate understanding of the concept of violence" (p. 550).

This paper examines violence on an interpersonal level, constituting those physical actions taken by a person, singularly or in concert with other individuals, against another individual or third parties. The U.S. Department of Justice, Bureau of Justice Statistics (as cited in Mercy, Rosenberg, Powell, Broome, & Roper, 1993) found in the United States, in relation to interpersonal violence, rates of 65 people dying and over 6,000 physically injured (fatal and non fatal, psychological and physical) on an average day. This paper will not cover violence that is self inflicted nor property related, military, police, non-physical, verbal, political, or emotional violence.

The study is also limited to violence connected with mental illness. Concentration will be upon examining populations, institutionalized (hospital and correctional) and community based, in which a hypothesized correlation between mental disorder and violent behavior is examined. The spectrum of analysis encompasses both institutionalized and general populations of persons with mental illness, reflecting the continuum of research that commenced with institutionalized subjects and has only since the 1990s included the general community. Further, methods of predicting violence, not treating or containing it, will be examined; therefore, this paper will not deal with interventions or programs. It will, however, treat clinical, psychometric and statistical approaches to violence risk assessment prediction.

Special attention will be given to predictive ability of clinicians, with the central research question to be answered: Is there a relationship between mental disorder and violence? Focus will be on determining if the relationship is strong enough to support clinical prediction of violent individuals based on the presence of mental illness disturbance correlated risk factors.

Overview

This review surveys the literature relating to assessing the connection between mentally disordered individuals and violence. The principal goal of the paper is to examine the current state of theory and research by looking at statistical and clinical methodology; by assessing the current state and accuracy of assessment technology; and by advancing recommendations relative to the efficacy of the use of violence

predictions for social workers. The paper is divided into four parts. First, definitions of mental illness/disorders, violence, dangerousness, and violence predictors, and the history of violence prediction science are considered. Second, the theoretical perspectives on violence are reviewed, including psychological, sociological and social psychological frameworks, public health and criminal justice theory, and models articulating the specific relationship of mental disorder and violence disorders. Third, violence prediction research methodologies, including design, sampling methods, accuracy of prediction, measurement models and instruments are explored and critiqued. Fourth, the implications for violence assessment in social work are explored relative to legal and ethical issues, practice, education, policy, research, and the impact on the individual social worker.

Search Strategy

Research for this paper utilized the five major modes of searching as described by Wilson: (a) footnote chasing; (b) consultation; (c) manual and computer searches in subject indexes; (d) browsing; and, (e) index searches, as well as Cooper's fifteen criteria of use, utility, and centrality of different sources of references, (as cited by White, 1994). Data bases used were Social Work Abstracts, Social Sciences Abstracts, Psych Info, Sociofile, Mental Health Abstracts, Current Contents: Social and Behavioral Sciences, and Dissertation Abstracts. The criteria as to where to look and the limits of information to accept or reject information are based on the fact that the bulk of the violence research literature has come out of the United States and Canada. Further, the distinct intervals in methodological approaches and research designs characterizing violence prediction has allowed for reliance on several landmark reviews

(e. g., Monahan, 1984; Mulvey, 1994; Otto, 1992; Torrey, 1994) and meta-analyses (e. g., Bonta, Hanson, & Law, 1998; Mossman, 1994), in addition to original sources.

Definitions of Mental Illness/Disorders, Violence and Dangerousness, and Violence Predictions

Mental Illness/Disorders

The fourth edition of the American Psychiatric Association (1994) Diagnostic and Statistical Manual of Mental Disorders, 4th ed., (DSM-IV) states there is no single definition for the concept of mental illness/disorders in that the boundaries cannot be precisely defined. Kaplan, Sadock, and Grebb (1994) synthesize the DSM-IV (1994) fourth edition proffered definition as "Mental disorder: clinically significant behavioral or psychological syndrome, associated with distress or disability, not just an expected response to a particular event or limited to relations between the person and society" (p. 304).

Monahan (1992) defines and specifically relates the studies of mental disorder and violence relating to others, unless otherwise stated, as referring to the mental disorders listed in the American Psychiatric Association (1987) Diagnostic and Statistical Manual of Mental Disorders, 3rd edition, revised [DSM-III-R), : "major disorders of thought or affect that form a subset of Axis I" (p. 514).

The standard definition invoked in criminal and civil law in the State of Florida is that articulated in the Florida Mental Health Act (1997):

"Mental illness" means an impairment of the emotional processes that exercise

conscious control of one's actions or of the ability to perceive or understand reality, which impairment substantially interferes with a person's ability to meet the ordinary demands of living, regardless of etiology. For the purposes of this part, the term does not include retardation or developmental disability as defined in Chapter 393, simple intoxication, or conditions manifested only by antisocial behavior or substance abuse impariment. (p.1881)

Violence and Dangerousness

Operational definitions of violence determine the research questions to be asked and the methodologies to be followed. According to Fraser (1995), and Brizer and Crowner (1989), no universal or singularly applicable definition of violence is in use. Fraser cautions those engaged in violence research and practice to make clear the project- or service-related definitions in order that behaviors, offenses and populations are specifically identified. Monahan (1981) indicates definition is influential in how "results differ."

Monahan (1981) considers as too vague the terms "dangerousness" (because it creates confusion as to what is being predicted with the probability assigned to the prediction), and "dangerous behavior" (which is a conditional *what if then* prediction in and by itself), and prefers the terminology "violent behavior" or "violence" because it is "conceptually crisper," focusing on action and thereby separating definition from probability. Monahan (1984) maintains dangerousness is predicated on perception while violence is an act of threat or force resulting in injury to another party.

Newhill (1992) reviews the literature defining dangerousness and from it concludes dangerousness is a perceptual and a legal construct, not a behavioral or personality trait, or a psychiatric or medical diagnosis but "a relationship between persons and situational and environmental factors that together compose the 'dangerous state'" (p. 77).

The distinction between the probability of violent behavior and its actual occurrence is not always articulated. Public health (Mercy et al., 1993) quantifies injuries (fatal, nonfatal, psychological, physical) from a health perspective and defines interpersonal violence "as threatened or actual use of physical force against a person or a group that either results or is likely to result in injury or death" (p. 8).

Megargee (1976) defines violent behavior as "acts characterized by the application of overt threat of force which is likely to result in injury to people" (p. 12). By "injury" Megargee means physical, and "threat' includes crimes threatening injury but in which it was not fulfilled.

Because the perspectives of researchers (statutory, theoretical, philosophical, causative, and dimensional) shape the parameters of studies, care will be taken throughout this paper to identify the frameworks of researchers in defining violence and in relating it specifically to mental illness and prediction. The definition used in this paper will be the act of interpersonal violence by an individual with intent to physically harm that is likely to result in injury or death to another individual.

Prediction of Violence

Violence prediction refers to "predicting who among us will commit a violent act...in order to take preventive action" (Monahan, 1981, p. 21). Dershowitz (1974) states "the preventive confinement of dangerous persons who cannot be convicted of past criminality but who are thought likely to cause serious injury in the future has always been practiced, to some degree, by every society in history regardless of the jurisprudential rhetoric employed" (p. 57).

This paper will examine prediction of violence in theory and practice as articulated in three generations (first, second, new) of research as described by Monahan (1984), Otto (1992), Monahan and Steadman (1994), and Steadman, Monahan, Appelbaum, Grisso, Mulvey, Roth, Robbins, and Klassen (1994). "Generations" is the terminology employed in the literature which cites the specific demarcation points signifying major change in the methodology of violence prediction.

Litwack (1994) differentiates between "an assessment of dangerousness" (clinical assessment of risk justifying an intrusive action such as civil commitment) and "prediction of violence" (a prediction patient *will* be violent requiring legal action based on sufficient risk of committing serious harm). In intentional interpersonal violence, Limandri and Sheridan (1995) caution as "to the difficult task for a clinician to make a judgement between the two extremes" (p. 17) of underpredicting the potential for danger and overpredicting the risk of further violence. The former "places the client at risk of being killed or seriously hurt" and the latter may result in the client losing "trust in

the clinician's ability to identify a dangerous situation" (p. 16).

Monahan (1981) posits violence prediction is an "overarching concern in both the mental health and criminal justice systems" (p. 21). In that generational studies of prediction apply to both criminal and civil research, definitional elements of each are identified by the MacArthur Research Network on Mental Health and the Law (1996a) as (a) civil (e. g., "involuntary mental hosptialization - and...involuntary treatment and intensive supervision in the community - [are] often predicated on a clinical judgement of 'dangerousness to others'" (p. 1), and (b) criminal (e. g.,"involuntary treatment in a forensic hospital - and...involuntary community treatment and monitoring - for mentally disordered offenders turns on an assessment of undue risk of violence" (p. 1).

Chaiken, Chaiken, and Rhodes (1994) distinguish between violence prediction, postdiction and classification. Prediction is seen as research that is future oriented, longitudinal and based on one of three types of models: (a) occurrence (e. g., within a specified period of time); (b) failure-time (e. g., length of time until violent event); and, (c) rate (e. g., number of violent events within a specified time). Classification is considered cross-sectional and focused on dividing individuals into distinctive groups (e. g., psychiatric, correctional). Postdiction collects behavioral data taken from stages of an individual's criminal career (e. g., crime commission rates during previous year), and is used to make estimates of concurrent behavior.

Syntheses of the conceptual framework of violence prediction for first, second and new generation studies by Miller and Morris (1988) and Monahan and Steadman

(1994) indicate the approaches are essentially actuarial (statistical) or clinical (personal judgements), with data from epidemiological (prevalence) studies utilized to augment the most recent findings. Chaiken, Chaiken, and Rhodes (1994) link the generational violence prediction studies to their occurrence, failure-time, or rate models "by defining a prediction study as one whose underlying analysis fundamentally requires longitudinal data information about the same subjects' behavior at two or more points in time" (p. 219).

A Historical Review of Violence Prediction

Modern violence prediction research uses two primary models (actuarial and clinical) and has been strongly influenced by a third model (epidemiological).

Actuarial

The actuarial or statistical strategy predicts on the basis of "how others have acted in similar situations...or on an individual's similarities to members of violent groups (Milner and Campbell, 1995, p. 21). Statistical models are mathematical, using additive linear, clustering, or contingency tables analysis, in conjunction with risk factor instruments. Actuarial tables are precise in stating which data are to be used or not used in prediction, and employing uniform data on all cases in a study, such as birth order (Gabor, 1986; Monahan, 1981).

Clinical

The clinical strategy predicts on the basis of a clinician's personal judgement, training, experience, and observation, with models including linear, such as decision

trees and critical pathways, hypothetico-deductive (cues), and risk assessment (Limandri & Sheridan, 1995). Clinicians may add or drop a factor such as birth order in one case but not another, considering the specific criterion relevance to a specific case (Gabor, 1986; Monahan, 1981).

Epidemiological

Swanson (1994), Link and Stueve (1994), and R. Otto (personal communication, September 3, 1997) indicate epidemiological studies are used to classify groups at high risk for interpersonal violence, but not individuals. The intent is to classify behavior, not persons, that might indicate violent behavior with mental illness. Data are drawn and analyzed from large-scale studies. What is estimated is the "general prevalence of mental health psychiatric disorders in community populations" (Swanson, 1994, p. 101). Unlike arrest studies using official arrest records, epidemiological studies use violence or behavior indicators, and collect "information about people who have mental disorders ('cases') and people who do not ('controls')" (Link & Stueve, p. 140). Current symptomatology is controlled by use of a psychotic symptoms scale strongly related to most indices of recent violent behavior, with "differences in rates of violence between patients and nonpatients... accounted for by the level of active psychotic symptoms that the patients were experiencing" (Monahan, 1997, p. 3).

Historical context and pioneering research.

Systematized violence prediction had its genesis in the 1920s. Research dealt exclusively with probation and parole populations from prisons and reformatories.

The first such research was Warner's 1923 study of 680 prisoners in the Massachusetts State Reformatory (as cited in Gottfredson, Wilkens, & Hoffman, 1978). The study found little relation between board of parole criteria when compared to success and violation discriminations after prisoner release. Success and failure rates were based upon commission of specific criminal acts, and Warner concluded "'those guilty of crimes that shock society are less likely to violate parole'" (as cited in Gottfredson, p. 43).

The two methods primarily employed by criminological researchers from the 1920s until well into the 1950s were developed by Burgess (known as the Burgess method) and Sheldon and Eleanor Glueck.

Burgess (as cited in Gabor, 1986; Gottfredson et al., 1978, and) looked at 3,000 men who had been paroled from three Illinois penitentiaries using an actuarial table (he called it an experience table) in which the variables, predictor and criterion, had additive, linear associations. The technique used many predictive characteristics (21 factors) without weighting, in relation to "possibility of successful parole outcome" (Gabor, p. 79). The instrument produced a prediction score affiliated to violation rates. Burgess "identified numerous factors, such as prior criminal record and age at release, that were associated with the commission of crime on parole" (Monahan, 1983, p. 1171)

The Gluecks conducted studies between 1930 and 1950 (as cited in Gabor, 1986; Gottfredson et al., 1978), examining life histories of 510 prisoners from the

Concord Reformatory in Massachusetts whose sentences expired between 1921 and 1922. The Glueck technique used a small number of characteristics with a weighting system, and determined their relevance by correlating predictive factors and outcome variables related to differentiating parole success or failure. The Glueck study did not specifically deal with violent criminology (Monahan, 1983, p. 70), but used three childhood correlates as factors to predict "later crime in young adolescent boys" (a) maternal supervision, (b) maternal discipline, and (c) family cohesion.

Although more sophisticated statistical methods were subsequently used in criminological research for predicting criminal behavior (configural analysis, multiple regression, log linear analysis, multidiscriminant analysis), the American Justice Institute/National Council on Crime and Delinquency review of instruments for predicting criminal behavior (as cited by Monahan, 1983) states "'that most later work has been largely a refinement and elaboration of Burgess' basic method'" (p. 1171). A review of 40 studies by Simon (as cited in Gottfredson et al., 1978) concluded "'all of them work equally well'" (p. 47). Gabor (1986) found in Simon's review implications that other than statistical criteria be chosen as the method and suggested the necessity of better classification procedures, data bases of greater validity and reliability, and greater selectivity in variable choice.

First generation.

The term "first generation" was coined by Monahan (1984) to refer to the studies which emerged in the 1970s "in which mental health professionals' predictions of

dangerousness were compared to actual outcomes" (Otto, 1992, p. 105). The research methodology of first generation studies was (a) clinical, (b) employed univariate predictions, (c) primarily used as a criterion measure arrest for violent crime (e. g., murder, rape, aggravated assault, robbery, injury offenses), (d) focused on individuals who were institutionalized for criminal/juvenile arrest, conviction, or who were classified as mentally ill offender, defective delinquent, or incompetent to stand trial, (e) and monitored discharged individuals in the community as to performance of violent behavior though police records and at times mental health records.

Kozol, Boucher, and Garofalo; Steadman and Cocozza; Cocozza and Steadman; Steadman; Thornbury and Jacoby (as cited in Monahan, 1981) represent the major first generation studies which "attempted to validate the ability of psychiatrists and psychologists to predict violent behavior" (p. 72). The studies were conducted on individuals who had been institutionalized (psychiatric, forensic, penal), and were released between 1970-1979.

Monahan, in his 1981 monograph, "The Clinical Prediction of Violent Behavior," reviewed and synthesized the first generation literature. He concluded the clinicians were twice as often wrong as right when they predicted violence and the accuracy of prediction of violence among the mentally disordered was accurate only one-third of the time. He critiqued the studies for dealing only with populations in long-term custodial institutions, testing information that was out of date (predictions were made during institutionalization but tested after subjects had aged and may have had lengthy therapy and medication), not detecting much violence data (by underestimating extent of violence due to an exclusive reliance on arrest reports), allowing a gap between a

subject's institutionalization where a prediction is made and community situations where community validation occurs and is measured, and using arrest records, often inaccurate, as indicators of violence. A few years later, Monahan (1984) further critiqued the studies for uncoordinated research, problematic criterion measures (e. g., failing to track inmates in the community, not counting rehospitalization resulting from violent behavior), predictor variables being too restricted (e. g., failing to assess situational factors), and constricted samples (e. g., not receiving ratings of inmates' relative risk when they were considered appropriate for discharge).

Brizer (1989) indicates commonalities in the studies "were characterized most often by univariate predictions intended to be valid over long periods of time and across different settings" (p. xii), citing as a prototype a study by Hellman and Blackman in which "a triad of childhood behaviors (enuresis, fire setting, and cruelty to animals) was purported to be associated with aggressive crime later in life" (p. xii). He found the primary criterion measure in the studies was arrest for a violent crime.

Second generation.

Second generation studies commenced in 1980 and continued into the 1990s. Second generation studies were conducted in subject settings where patients could be closely observed: psychiatric emergency rooms, public, private, and general psychiatric hospitals, psychiatric units, university based acute care, and state and VA hospitals. According to Brizer (1989), second generation studies are differentiated from first by their focus on time-limited prediction and single-context forecasts.

Otto (1992) conducted a major review and synthesis of second generation studies, dividing them into experimental prediction and clinical prediction research. Dangerous behavior was defined as including "(a) physical violence directed against self of others, or (b) threats of physical violence or other intimidating behavior directed toward self or others" (p. 104). Otto found, in contrast to first generation research where arrest records were exclusively used to measure ensuing dangerous behavior, second generation research used a variety of criterion behaviors as measures of dangerousness (e. g., subsequent contact with the mental health system in relation to independent variables such as diagnosis or commitment status). He cites Poythress as finding this significant in "expanding and better defining the behaviors used as dependent measures" in that they "more closely approximated what the legal system seems to mean by 'dangerousness'" (p. 129). R. Otto (personal communication, October 9, 1997) indicated a more correct terminology today than "criterion behaviors" would be "criterion measures" (e. g., arrest records, criminal convictions, hospital psychiatric admissions, self reports, reports by significant others). This was confirmed in his review, where he states even when predictive accuracy was best, with "well-informed, short- term predictions of broadly defined dangerous behavior in settings similar to those in which the predictee is likely to operate" (p. 128), clinicians still made considerable numbers of wrong predictions. Estimates of the incidence of dangerous behavior when measuring violence was found to be between 20-50% among mentally ill people with histories of aggressive behavior. In terms of accuracy of prediction, when

comparing his second generation review findings with Monahan's first generation 1981 summary, Otto states: "rather than only one in three predictions of long-term dangerousness being accurate, at least one in two short-term predictions of dangerous behavior are accurate" (p. 130).

New generation.

A growing number of researchers (Monahan & Steadman, 1994; Steadman et al. 1994), recognizing methodological problems in second generation studies, began to advocate for new designs in assessment research. The result was, commencing in the late 1980s, creation of a Research Network and a multi-year, multi-phase study known as the MacArthur Violence Risk Assessment Study, sponsored by a grant from John D. and Catherine T. MacArthur, to the University of Virginia. The researchers' (a working group comprised of Henry J. Steadman, Pamela Clark Robbins, John Monahan, Paul Appelbaum, Thomas Grisso, Edward Mulvey, and Loren Roth) critique of second generation research is best articulated in the MacArthur Violence Risk Assessment Study (MacArthur Research Network on Mental Health and the Law, 1996a), which found narrow predictor variables such as "chart diagnosis" or "simple demographic information," weak criterion variables such as "arrest or rehospitalization for a new crime," patient samples highly restricted to "males with a prior history of violence," and the research uncoordinated and fragmented by lack of synchronization of research methods and instruments. The critique made is similar to that of first generation research by Monahan (1984). Otto (1992) had in fact cautioned that "Our ability to

draw conclusions regarding professionals' accuracy at predicting dangerous behavior will depend on the degree to which second-generation investigators have incorporated Monahan's recommendations into their research" (p. 108).

The MacArthur Risk Violence Assessment Study, using an actuarial approach, (a) examined patients released from acute inpatient facilities about the risk of violence among released mental patients, and (b) as a supplement, designed the MacArthur Community Violence Risk Assessment Study, employing a stratified random sample from those living in the neighborhoods in which the former patients resided to compare rates of violence and risk factors.

Monahan (1996b) indicates the MacArthur Study new generation research and methodology were influenced by and built upon two epidemiological pioneer studies by Swanson, Holzer, Ganju, and Jono (1990), and Link, Andrews, and Cullen (1992) "that refocused the issue of the link between mental disorder and violence to specific symptoms and factors" (p. 2) and also "took into account" a predictive clinical study by Lidz, Mulvey, and Gardner (1993) in which clinicians made predictions on likelihood of violence.

Both of the above epidemiological studies collected information about people who have mental disorders (cases) and those who do not (controls) and used as criterion variables indicators of violent or illegal behavior other than official arrest such as hitting, fighting, and using a weapon (Link & Stueve, 1994). The studies suggest levels of violence for the mentally ill at several times that of the general population.

Lidz et al.'s (1993) clinical predictive study examined predictions of clinicians among patients who had returned to the community from an acute hospital. Unlike

earlier clinical studies, which measured violent behavior using police arrests, commitment hearing reports, or clinical records, Lidz et al. used interviews with physicians to measure their predictions and interviews with patients and collaterals, as well as official records, to measure violent incidents, which included laying hands on another person with violent intent or threatening someone with a weapon (e. g., rape, attempted homicide, assaults requiring medical attention).

Limandri and Sheridan (1995) state interpersonal violence prediction is still in its infancy. They cite the need for the development of accurate and reliable prediction models, nonproblematic criteria to use in identifying "violent acts" and "violent people," and a broadening of demographic studies which have been dominated by gender-specific (I. e., male) and heterosexual populations.

Timeliness and Importance to Social Work

Borum (1996) indicates "assessment and management of violence risk are critical issues, not just for psychologists and psychiatrists in forensic settings but for all practicing clinicians" (p. 954). He finds clinical practice guidelines and procedures for risk assessment to be presently lacking standardization. He further postulates that due to diversity of circumstances necessitating judgements (psychiatric emergency services, civil psychiatric hospitals, forensic evaluation, treatment settings, outpatient private practice), logistic limitations (clinical or organizational context), differing assessment tasks (intervention, evaluation), and differing circumstances ("varying time frames for prediction of the relevant behavior" p. 953), "separate or more specified"

guidelines and standards might need to be developed for differing disciplines and settings.

Emerging social work specializations, whether in dealing with civil or forensic populations, require clinical judgements relative to "dangerousness to others" and "risk of violence." Major practice areas deal with victims, families as clients (family conflict), community mental health center populations, and forensic services for court referred services involving crime, competency to stand trial and not guilty by reason of insanity. Specifically related to social work skills are identification and assessment of physical child abuse perpetrators, physical child abuse victims, spousal batterers, spouses who may be homicidal, sexual offenders and any other potential perpetrator of intentional or mental illness-based interpersonal violence (Limandri & Sheridan, 1995).

Social workers also provide mental health services in community-based and institutional and correctional programs (Monahan, 1992), assess the impact of violence within the family, community, school, and other institutions (Van Soest & Bryant, 1995), as well as community-based and institutional psychiatric facilities where decisions about involuntary evaluation and treatment, restraint, and discharge involve considerations of dangerousness to others (Borum, 1996; Mulvey and Lidz, 1985). Borum (1996) lists the key settings where clinicians must make decisions relevant to violence potential as emergency psychiatric services, civil psychiatric hospitals, forensic evaluation and treatment settings, and private outpatient practice offices.

Clinicians are increasingly being legally authorized to make determinations of

dangerousness as part of the evaluation process involved with emergency civil commitment (Newhill, 1992). A major part of tort liability (Appelbaum, 1985) involves the reasonableness of decisions made by clinicians, the opportunities and methods used to gather information relevant to violence risk, and the likelihood that most clinicians would have arrived at a similar conclusion.

Werner, Rose, and Yesavage (1990) differentiate between informal clinical statements (made to other professionals, advocates or victims) and formal (made in court or hearings involving sentencing, parole, custody). Social workers, when offering either formal or informal statements, must recognize that their views and comments are considered by others to be informal or formal predictions, and as such need to be accurate and bound by the ethical and legal mandates of expert witnesses (Milner & Campbell, 1995).

Van Soest and Bryant (1995) point out that for the social work profession, "education of practitioners, educators, and students is needed to increase awareness of the pervasiveness and complexity of violence in society" (p. 55). They indicate the timeliness to and importance within the profession of attention to violence and its ramifications by citing that the Delegate Assembly of the National Association of Social Workers (NASW) in 1993 designated violence prevention as a top priority, and that public information, education and curriculum initiatives relating to violence prevention and awareness were undertaken by the NASW between 1993-1996.

Campbell (1995) sums up the problematic implications to mental health professionals in clinical settings faced with violence prediction as "intersecting our clinical judgements, our advocacy agendas, and our ethical responsibilities" (p. vii).

Chapter 2

THEORETICAL PERSPECTIVE:

MODELS AND PREDICTION FRAMEWORKS

The range of violence causation and effect theory extends from free will to determinist. According to Curran and Renzetti (1994), the major theoretical schools include (a) classical: free will and concomitant responsibility for one's behavior; (b) neo-classical: mitigating factors, such as the offender's individual characteristic; and, (c) positivist: biological, psychological, and/or social. Glaser (1983) asserts that theoretical constructs are approached differently in various models due to the differing problems being addressed, a focus on the disparate elements of a singular problem, concentration upon alternative components of the same problem, or differing terminological usage for the same problem. He states the psychological, sociological, and social psychological frameworks each have advantages for particular problems and purposes, with types of theories complementing rather than contradicting each other, just as the "operation of an automobile's engine may be validly explained in a mechanic's broad terms, a chemist's analysis, and a physicist's mathematical formulas, different aspects of a crime problem are illuminated by different kinds of theories" (p. 308).

No grand theory exists linking violence and mental disorder, and a "single coherent theory" may not be feasible (Steadman et al., 1994). There has been no underlying theory in most risk research, and although recent research (e.g., the

MacArthur Study) have used what it calls "mid-level" or "mid-range" theories to decide what independent variables to consider, the process of combining variables in search of the best indicators of degree of risk is largely an atheoretical, wholly actuarial approach (T. Grisso, personal communication, August 18, 1997).

This chapter will examine the particularly salient constructs underlying psychological, sociological, and social psychological theoretical frameworks at the broadest level for predicting violence. Also, public health and criminal justice theory will be examined.

The Theoretical Linkages Between Criminal Behavior and Violence

According to Aker (1994), theory relating to the relationship between criminal behavior and violence seeks to be responsive to two interrelated parts:

1. why are there variations in group rates of crime and deviance; and,
2. why do some individuals come to commit criminal and deviant acts. (p. 4)

Aker (1994) posits, "group and individual behavior are subtypes of the same general question: *Why do or do not people commit crime and deviance*" (p. 5). He maintains theorists respond to these two questions by grouping causation for criminal behavior and its linkage to violence in multiple ways. One way is through focusing on "social structure" (I. g., social or cultural composition determines crime proportion). Another approach is "processual" (i.e, an individual's criminality is based upon circumstances, life history, characteristics). An alternative mechanism for linkage "categorizes the theories according to the general scientific discipline from which the

explanatory variables are drawn" (p. 5): (a) biological, (b) psychological, (c) social psychological; and/or, (d) sociological.

Psychological Frameworks

Psychoanalytic (psychological and psychiatric).

Psychoanalytic theory (as cited in Kaplan, Sadock, & Grebb, 1994) perceives criminal behavior as being a symptom of a psychic conflict involving the layers of personality expressed by the id (unorganized instinctual drives), ego (conscious part of the psyche controlling thought and behavior), and superego (a person's moral conscience). Causation is considered to be motivated unconsciously and deemed to be a consequence of abnormal maturation or control of instincts, a poor parental relationship, fixation at a stage of emotional development, and/or repressed sexuality or guilt while moving through psychosexual stages of oral, anal, and genital development. Freud (1933) defined aggression as a separate instinct in its own right whose aim was destruction. He posited aggression could not be eliminated, but modified, and should be treated as an instinctual drive that originates internally, as do hunger, thirst, and sex. In psychoanalytic theory, all criminal behavior is explained as expressions of symptoms of one or more underlying mental illnesses, emotional disorders or psychic disturbances, dysfunctional attempts to deal with repressed guilt, feelings of hopelessness and helplessness, or other unresolved unconscious, emotional turmoil. Crime is seen as stemming from irrational impulses or compulsions. Early childhood events are seen as crucial, while current environmental or social events are deemed

irrelevant and important only as triggering events for the dysfunctional behavior. Irrational and unconscious behaviors are perceived as the basic forces behind crime.

Quay (1983) maintains psychoanalytic theory, "in addition to the unobservable nature of its basic explanatory constructs and its reliance on instinctual drives, including aggression, does not provide adequate room for the empirically well demonstrated role of environmental factors and the processes of learning" (p. 332). Consequently, he believes its explanations of criminal behavior today are held by a limited school of Freudians. Akers (1994) indicates what is lasting and influential from psychoanalytic theory are the conceptualizations of aggression theory, socialization of people by environment, and the impact of early events; its weakness includes a dependence on clinical and case studies using small and unrepresentative samples which inhibit generalization.

Drawing on the conclusions of work on correlates of violent behavior by Monahan (1981) and Wilson and Herrnstein (1985) as "anchoring points," Meloy (1987) indicates "it is as an axiom of psychology that the best predictor of future behavior is past behavior...hence, the single most important correlate of future violence is past violence" (p. 39). He suggests that therapists structure intrapsychic assessment (e. g., "the distinction between conscious intent and unconscious motivation to act" (p. 40)) by the intrapsychic factors of: (a) primary process (e. g., immediate gratification to aggressive thought) and secondary process (e. g., displacement or delay of aggressive thought); (b) the relationship of thought and affect to impulse; (c) the observing ego

(syntonic or dystonic nature of violent thoughts in relation to patient's ego); (d) transference implications (e. g., an implied threat to a psychotherapist); and (e) psychopathic implications (e., g, psychodynamics inferring psychopathic character traits such as when a patient deceives a psychotherapist).

Social learning theory.

There are two parallel constructs in social learning theory (a) the social behavioral approach, primarily that of Albert Bandura (1979), and (b) in the field of criminology, the theory of crime and deviance developed by Ronald Akers in collaboration with Robert Burgess (Burgess & Akers, 1966).

Bandura (1979) maintains all aggressive behaviors are learned, but that biological (e. g., genetic) factors limit rate and type of response. Social learning factors (e. g., observation, direct experience) determine the form, frequency and targets of aggressive behavior. Two broad classes of motivators of behavior are identified: (a) biological (e. g., stimulation from body conditions and external sources);and, (b) mental (e. g., social, sensory, material consequences an individual can imagine for the future). Aggressive behavior is maintained by external and vicarious reinforcement such as tangible rewards (e. g., goods and money), social-status rewards (e. g., approbation and approval from parents who condone outside-of-the-home aggressive behavior), and peer approval (e. g., of fighting, truancy, stealing). An event that is frustrating, an individual's personal interpretation placed on one's own physiological state of arousal, anticipation of a future event in the present, or delusional beliefs may become

"aversive" and lead to aggression. Most important is the ability of the person to be self-regulating through self-generated inducements and self-produced consequences. Origins of aggressive and illegal behavior are seen to be in the family, the subculture in which people reside, and the media's symbolic modeling.

Akers and Burgess (as cited in Akers, 1994; Cohen, 1983) present a Skinnerian interpretation of social learning theory, in which the differential association theory of Sutherland (systematic criminal behavior is caused by associating with or not associating with those who commit crime or those who are law abiding), combines with behavioral (stimulus response) learning principles. Akers postulates that both criminal and conforming behavior is "acquired, repeated and changed" by the same process of imitation, definitions (e. g., the personal meanings or attitudes attached by an individual to a given behavior), differential reinforcement, and differential association. The process produces criminal behavior more likely than conforming behavior when those being associated with promote deviant patterns of behavior, reinforce deviant behavior over conforming, are exposed to deviant models, and realign personal definitions with deviant acts (e. g., a radical ideology motivating a terrorist act, an anti-abortion group justifying civil disobedience). From a Skinnerian perspective, social learning theory refers to an individual's development as "operant conditioning," in which rewards and punishments known as positive and negative "reinforcements" are evoked.

Biobehavioral theory.

Early Studies

Early biological theories focused on separating and categorizing law-breakers and law-abiding individuals based on anatomical, physiological, or genetic abnormalities. Prominent among early biological research theory were the studies conducted by Lombroso, Sheldon, Goring, and Hooten (as cited by Akers, 1994, and Pollock, Mednick, Gabrielli, Jr., 1983). It should be noted that their focus was not necessarily on violent criminals or violence explicit.

Cesare Lombroso in 1876 hypothesized that criminals were born as such, with innate criminality, characterized by atavist physical features (a combination of genes leading to distinct physical appearance) that were a throwback to primitive man. Charles Goring in 1913 compared 37 physical traits he found in common between prisoners, hospital patients, university students, soldiers and professors, thereby refuting Lombroso's theory that criminals were a throwback to an earlier stage of evolution. However, he concurred with Lombroso in the existence of born criminal traits.

E. A. Hooten in 1939 studied 17,000 subjects by comparing the physical characteristics of prisoners at multiple sites with those of civilians. He rejected Goring's findings and concluded that prisoners were biologically inferior.

William Sheldon in 1949 postulated that an individual's somatotype (body type, physique) displayed distinctive temperamental traits. He identified three types of

somatotype: (a) endomorphs; rotund, with warm personalities, (b) ectomorphs; tall, slim, with sensitive personalities,(c) mesomorphs; muscular, vigorous, socially assertive.

Modern Research

Akers (1994) posits that modern biological reasoning includes "the interplay of biological, social, and psychological variables in crime and delinquency" (p. 69). Modern biobehavioral research on theoretical biological influences on violent behavior focuses on genetic mechanisms (influence of genes on human behaviors), neurochemical mechanisms (testosterone and its androgenic and estrogenic metabolites), chromosomal abnormality (the super-male criminal), and reactive hypoglycemia and diet as (a) influencing the probability of aggressive response to environmental events, and (b) influencing criminal aggressiveness thorough organizational as well as activational mechanisms and stimuli (Akers, 1994 Miczek, Mirsky, Carey, DeBold, & Raine, 1994). Carey (1994) indicates the phenotype (observable behavior) is termed "aggression or agonistic behavior" and "the study of behavioral biology in animals may yield clues to the conditions for onset and cessation of some violent encounters in humans" (p. 21). Mirsky and Siegel (1994) suggest the possibility of a relationship between violent and aggressive behavior and "abnormal function of specific regions of the brain... symptomatic of an underlying brain disorder" (p. 5). Brain (1994) posits a relationship between the endocrine system (ductless glands) with its hormonal transfers through the blood stream and aggressive behavior.

Mednick's theory of inherited criminal tendencies (as cited in Akers, 1994), considered the "most systematically stated and tested biosocial theory," hypothesizes one "inherits a greater susceptibility to succumb to criminogenic environments or to adapt to normal environments in a deviant way" (p. 79). Mednick posits that the inherited autonomic nervous system (ANS) of the susceptible individual, because of its slow arousal potential and reaction to stimuli, results in "those who inherit slow arousal potential [learning] to control aggressive or anti-social behavior slowly or not at all. Thus, they stand a greater risk of becoming law violators" (p. 79). Mednick interprets his theory to mean (a) a person with a normal ANS experiences fear reduction immediately on inhibiting antisocial behavior and the person will learn to inhibit this activity because of the powerful reinforcement of fear reduction, and (b) conversely, development of normal inhibition might not occur if a person's ANS decreases the fear too slowly or ineffectively to generate the normal reinforcement. However, Walters (1992) conducted a meta-analysis of heredity in crime and concluded its effect weak. Concomitantly, Rafter (1992) indicates that many sociologists and criminologists have problems accepting the determinist theory of innate or genetic biological factors that can only be changed through brain or biological modification, because the remaining alternative is isolation, incarceration or selective breeding.

Akers (1994) sums up the current state of research on biological influences on crime by concluding that theories positing specific genetic or physiological defects have not and will not have wide criminological acceptance. In contrast, "the greater the

extent to which a biological theory proposes to relate normal physiological and sensory processes to social and environmental variables in explaining criminal behavior, the more likely it will be empirically supported and accepted in criminology" (p. 83).

Sociological and Social Psychological Frameworks

Social disorganization theory.

Social disorganization theory will be used as a broad framework to link violent behavior to anomie (strain), related cultural, family and socioeconomic factors, specifically poverty and deprivation.

Sampson and Groves (1989) define social disorganization theory as referring to the failure of community structure to provide meaningful social control because the common values of its residents are not realized. Social organization and social disorganization are the polar ends of a continuum of community social control. Span of local supervision provided to local problems is conceptualized in terms of a community's interdependence and the prevalence of informal (acquaintanceship and intergenerational kinship) and formal (organizational participation) social networks. A community transcends geography and spatiality to a focus on its social and organizational networks. Social disorganization becomes separable from the causal processes leading to it (poverty, mobility) and the degree of resulting criminality.

Anomie (Related Strain)

Anomie theory (first propounded by Emile Durkheim in 1897) deals with the concept that high rates of crime and deviance occur where there are high levels of

social disorganization owing to "normlessness." A state of normlessness follows from a collapse of social solidarity, in which the basic bonds holding individuals together in a social order collapse, leading to a lack of solidarity, community, society or cohesion and compelling each person to "go it alone" (Lilly, Cullen, & Ball, 1995). Akers defines related strain theory as dealing with the concept that when disadvantaged minority groups and the lower classes have been socialized to hold high aspirations, but are blocked off from achieving them due to blocked educational and occupational opportunities, "this anomic condition produces strain or pressure on these groups to take advantage of whatever effective means to income and success they can find, even if these means are illegitimate or illegal" (p. 146).

Merton's (1938) first use of anomie theory, influenced by Emile Durkheim, posits that when a disassociation occurs between cultural ends that are valued and legal means to achieve the ends, malintegration takes place. The conflict exists when strong cultural emphasis on success is not matched by an equally strong emphasis on means. An anomic condition (lack of social regulation) induces pressure to take action, illegitimate or illegal.

Cohen (1983) examined the structural sources of strain in the delinquent subculture and posited it was due to status depravation and nonacceptance by conventional society. He sees a "reaction formation" due to "status frustration" by lower-class youth who cannot meet middle-class standards and expectations.

More recently Agnew (1992) broadened the scope of strain theory by positing

that crime and delinquency are adaptations to stress irrespective of the source. He found deviance-inducing strain to originate from (a) failure to achieve positively valued goals, (b) removal of positively valued stimuli, and (c) confrontation with negative stimuli.

According to Slaby and Guerra (1988, 1990), who elaborated a social-cognitive development model and extended it to antisocial-aggressive adolescents, high levels of aggression are associated with stressors such as low displays of problem solving skills and high endorsement of beliefs supporting aggression (e. g., legitimacy of aggression, victims deserve aggression, victims do not suffer). Slaby and Guerra (1988) suggest "habitual patterns of cognitive mediation that underly aggression" may be changed "through interventions designed to build problem-solving skills and to modify beliefs related to the use of aggression" (p. 588).

Culture

The 1920's and 1930's research of Shaw and McKay (as cited in Akers, 1994; Cohen, 1983) of urban crime and delinquency interprets lawlessness as an outcome of social disorganization, in which social conditions are seen to promote deviant behavior by not inhibiting it. Lawlessness is found in many instances to be handed down through "social contacts" and "conformity to the codes and ideals of the delinquent and criminal groups" (Cohen, p. 343). The acquisition of patterns of criminality are by group contacts "just as any cultural form is disseminated and transmitted through social groups" (p. 343).

The commonality among cultural theories is "social order, stability, integration are conducive to conformity, while disorder and malintegration are conducive to crime and deviance" (Akers, 141). Wolfgang and Ferracuti's study (as cited in Akers, 1994; Cohen, 1983; Sampson and Lauristen, 1994) formulates the subcultural theory that there are subgroups employing a subcultural value system, which is not emphasized in the dominant culture and which supports the use of violence. Violence is the response norm and condoned when one's honor or the person's manhood are challenged.

Cohen (1983) disagrees with Burgess and Akers (1966) in their identification of Sutherland's differential association theory as being Skinnerian. Rather, he posits differential association as being a sociological construct in which crime is learned as any other element of culture though culturally patterned behavior. An individual becomes criminal because associations culturally transmit unfavorable definitions exceeding favorable definitions of law violation.

Reiss and Roth (1993) discuss the concept of community culture in which an isolated community develops a oppositional culture to widely accepted cultural values. Sullivan (as cited in Reiss & Roth, 1993) indicates magnification of neighborhood identification takes place especially in inner-cities, leading to a street culture that legitimatizes an underground economy in which criminals refer to crime in terms of "going to work" and "getting paid."

Disorganized communities give birth to gangs who culturally transmit and perpetuate their own subcultures. Sampson and Lauritson (1994) identify three dimensions as being antidotes to violence stemming from social disorganization: (a) supervision and control of teenage peer-groups; (b) formation of local friendship

networks by community or neighborhood residents, occasioning a concomitant increase in density of acquaintanceship and social control due to their engaging in "guardianship behavior against victimization;" and, (c) local participation in formal and voluntary organizations by community residents. Social cohesion is brought about when there is high participation by residents of all backgrounds, which provides for a sense of neighborhood membership and identity.

Family

In the literature, family factors relating to violence are examined with three emphases: (a) marital status of offenders; (b) aggression and other serious behaviors among children and adolescents; and, (c) a phenomena termed the cycle of violence (Sampson & Lauritson, 1994).

In terms of social disorganization theory, family disorganization may be explored through Coleman's theory of social capital (as cited by Lamb, 1996). Coleman argues that social capital (e. g., obligations and expectations, information channels, norms) is created by changes in interpersonal relations in manners facilitating productive action and family management. Lack of social capital is a primary feature of a disorganized community and by extension, of a disorganized family. Lack of social capital among adults and children is an important component of ineffective child rearing and problematic child development.

Thornberry (1997) maintains two family systems coexist: (a) the conventional, in which the basic structure is the family with its capital invested in human, social and

cultural norms; and, (b) the criminal, with a corresponding "criminal capital" invested in criminal behavior corresponding to the deviant norms of a parallel system.

Research has established that community residential stability is the primary determinant of the density of the friend/acquaintanceship network, which accounts for both increased levels of community social cohesion and reduced levels of crime and delinquency (Sampson & Groves, 1989). In a similar vein, cohesion (connectedness) of social networks among children and families facilitates closure, the control of children and families. Empirical support for the importance of family cohesion is found in a review by Sampson and Lauritson (1994) of recent studies where prediction of crime in multivarite models has the commonality of family disruption. Additionally, the finding that family disruption has a stronger effect on juvenile violence than adult violence tends to further support the idea that the consequences of family structure are related to patterns of social control. Sampson and Lauritson (1994) cite studies by Bandura and Walters; McCord, McCord and Howard; Farrington; Loeber; and Southamer-Loeber and conclude "parental neglect in the form of either lack of supervision or lack of other involvement has been found to be positively related aggressive behaviors in children" (p. 26).

Socioeconomic Factors, Poverty and Deprivation

Sampson and Lauritson (1994) note "association between social class and violent offending continues to be one of the most contested relationships in the literature" (p. 23). In support they cite three works. First, a meta-analysis by Bridges and Weis (1989) of the social class-violent crime association, found that when there were statistical controls on violence correlates such as population density and

availability of health care facilities, and the use of individual-level data, the magnitude of offending according to social class decreased, meaning that "studies using controls observed substantially weaker social class/violence correlations than did studies using no controls" (p. 28). Second, a study by Thornberry and Farnworth (1982) who cautioned the issue remains unresolved suggested a possible "reciprocal relationship between the social class of an adult and levels of criminality." Their findings were based on a re-analysis of Wolfgang's 1985 Philadelphia study, which found a negative relation of violent behavior to the occupational status for white fathers and a negative relation of arrests for violence with black adults' educational level. Third, a study by Brownfield (1986) indicated that findings of researchers are contingent upon their "conceptualization and operationalization" of social class as a theoretical measure (e. g., "neo Marxist conception of class categories...versus a more gradational measurement of socioeconomic success that combines occupational education measures" (p. 24).

Sampson and Lauritson (1994) indicate the role of poverty, deprivation and economic deprivation is "weak or conditional" in studies examined. Though "significantly associated," researchers differ as to "the independent role that poverty plays in explaining violence" (P. 50). Hence, it seems that the class-violence relationship remains a question (Brownfield, 1986; Thornberry & Farnworth,1982).

Environmental/situational theory.

According to Monahan and Klassen (1982), "the complex nature of situations, combined with a lack of definitional consensus over situational factors, leads us to broadly define situational-level risk factors as those factors outside the individual that

influence the initiation, unfolding, or outcome of a violent event " (p. 293). Sampson and Lauritson (1994) cite Block's inclusion in the situational umbrella of the microenvironment, an array of factors: social relationships and their histories; physical structures; weapons; neighborhood and community; and, the interaction and overlap of victim and offender.

Clark (1990) postulates that "criminogenic features" (producing or tending to produce crime), such as an unlighted environment near public transportation or a discotheque near housing for the elderly, contributing factors beyond the cause that facilitate criminal offending.

Studies by Moore, Fagan, Goldstein, and Cook (as cited in Moore, Prohrtrow-Stith, & Spivak, 1994) link as ancillary to criminogenic situations "criminogenic commodities" (e. g., heroin, cocaine, alcohol, guns). Jessor and Jessor are cited as indicating drug commodities in particular are a developmental influence, drawing individuals "into patterns of criminal offending that they would have resisted, but once established, seem to hold firm against other more positive social influences" (p. 190).

Apparently influenced by environmental/situational theory, a method in policing known as "problem solving" is being used by police to arrest offenders who adversely affect a situational environment (Moore et al., 1994). The concept is one in which officers are taught to view incidents not only for the law violation, but to examine the factors behind it and to deal with its criminogenic circumstances. Specifically, the approach is one in which there is a paradigm shift from dealing exclusively with criminal culpability to understanding that violence may be caused by the situation and that the

most effective response is to make the situation less explosive (e. g., removal of those from a crime scene who alter the situational framework by making it less criminogenic).

Moore et al. (1994) suggest employing the public health epidemiological model used in controlling infectious diseases, which includes attention to (a) the vector, (b) the host, and (c) the environment, with the resulting epidemiology of violence employing "feelings of anger, frustration, or aggression as the relevant agent of interpersonal violence" (p. 186). Moore et al. admit "how such concepts work in a less biological, more mechanical or sociological world is less clear" (p. 186), and subsequently added timing, pre-, mid- and post, to the categories of vector, host and environment. The model identifies "risk factors and interventions that might be successful in reducing risk factors for violence" (p. 187). As an example, Moore et al. cite the Haddon Matrix for Violence Prevention, in which three identified phases, (a) previolence, (b) during the violent act, and (c) after the violent act, are used in conjunction with host (potential attackers), vector (means and occasions creating opportunities), and environment (factors influencing hosts and vectors), to identify risk factors and interventions in interpersonal violence. The model is based on the perception that we are all a part of one another's environment in which each individual's actions affect the conditions in which other individuals live. Rosenberg (as cited by Moore et al., 1994) critiques the public health disease model as too focused on medical problems and changing individual behavior or the natural environments, and instead suggests a behavioral science model which emphasizes social behavioral and

social environmental change.

Sampson and Lauritson (1994) include weapons, drugs and alcohol, along with victim resistance and retaliation, as precipitants of violence; bystanders, they suggest, serve as deterrents. In particular, Moore et al. (1994) indicate that drugs are a major criminogenic commodity, which has resulted in a "major criminal justice effort to reduce levels of drug consumption through both supply reduction and demand reduction efforts...arrests of traffickers and street level dealers" (p. 197). They cite studies by Goldstein; Chaiken and Chaiken, and Altschuler and Brownstein of the drug environment of the 80's (e. g., one which combined the usage of old line drugs such as heroin, cocain and new line drugs such as crack, designer) and their correlates to violent behavior, which found

> participation in drug dealing appears to have a stronger relationship to violent acts than drug acts - the correlation between frequent drug use and committing violent crimes at high rates may be in large part due to users' involvement in the systemic violence of the drug trade or participation in the symbolic violence of the urban drug culture. (p. 229)

Monahan (1981) states six major situational correlates of violent behavior: (a) family environment; (b) peer environment; (c) job environment; (d) availability of victims; (e) availability of weapons; and, (f) availability of alcohol. He cites the President's Commission on Mental Health in 1978 as conceptualizing the first three "as environmental 'support systems' used by an individual for coping with life stress, or as

the sources of the life stress itself" (p. 132). Bem and Funder (as cited by Monahan, 1981) call attention to the degree to which a situation is "situation-centered" or "interdependent with a person's personality." For example, when people interact in an environment, their past histories or lack of histories of violence in that environment will match or not, indicating the probability or not of violence. "The probability that a particular person will behave in a given way in a certain situation is a function of the similarity between his or her characteristics and the characteristics of the people that typically frequent the situation" (p. 137). Specifically, people choose situations (e. g, historical fights with family members at home, patrons in a bar with a high frequency of fights) and situations draw certain types of people to themselves (e. g., a jewel thief to a pawn shop).

Monahan (1981) cites six conceptualizations of human environments by Moos in violence research:

1. ecological dimensions, such as meteorological (e. g., "a hot summer day does increase the probability of an urban riot" (p. 130), geographic and architectural;
2. dimensions of organization structure, such as staffing ratios and organization size;
3. personal characteristics of milieu inhabitants, such as age, sex, abilities;
4. behavior settings, such as a basket ball game;
5. functional or reinforcement properties of environments, such as peer approval, material goods, self-esteem being obtainable only through violent behavior;

and,

6. psychosocial characteristics and organizational climate, such as the social climate in a prison or hospital ward.

The most salient of the six conceptualizations of human environments in understanding violence, each with distinct utilities, are (a) personal characteristics of milieu inhabitants, (b) functional or reinforcement properties, and (c) psychosocial characteristics and organizational climate. An example of milieu characteristics would be a mental health professional determining probable violent behavior by assessing those with whom a client is living, working or interacting socially based on the probabilities of violence of these people on factors such as prior history of violence. Functional or reinforcement properties could be determined through a behavioral analysis based on whether a given environment rewards the commission of violent behavior (e. g., peer approval, material goods). Psychosocial characteristics and organizational climate can be assessed through the "unique personalities" of an environment in relation to violence (e. g., emphasis on order, control) and be measured with psychosocial scales.

The "social climate" of Moos is linked to the public health epidemiological concept of hosts, vectors, and environment though their shared belief in holistic mutually shared environments in which each individual's actions affect the conditions in which other individual's live. Especially interrelated are the microenvironmental situational umbrella reflected in the environment and the victim and offender overlap.

Decision Theory: Lens Model.

In the process of predicting violence, many researchers (Monahan and Steadman, 1994; Werner, Rose, & Yesavage, 1983) use a decision-theory model called the lens model, also known as the cue-utilization or multiple-cue probability approach to distinguish among approaches to the study of risk. In essence, it posits judgmental processes are based on the lifelong experiences of an observer, in which the validity of perceptions is determined by probablistic relationships (probable importance of any variable or combination of variables) of our situational assessment of cues and how they should be combined at any point in time. We perceive according to probability, all subject to change with experience.

Decision theory has its base in social psychology. Edwards (1954) is credited with the initial research, maintaining models taken from economic and statistical theory could be used by psychologists in human judgement and decision-making. Edwards developed a Subjectively Expected Utility theory (SEU) in which decision rules (guidelines for handling uncertainty describing judgements based on multiple sources of information) were established to combine beliefs (probabilities) and preferences (values or utilities). The theory is based upon the assumption that an individual's major choice criterion is one in which there is maximized subjective utility or value wherein the most appropriate alternative, after weighing positive and negative attitudes, is selected (Wolman, 1989). Subsequently, a broader approach known as Multi Attribute Utility (MAU) evolved and was developed by Von Wintefeldt and Edwards (as cited by Van Der Pligt, 1995a) which places greater emphasis on the individual decision maker's preference structure.

The lens model is based on the probablistic functionalism equation of Egon Brunswick (1956), an ecological (relationships focused on interdependence of humans and their environment) model. Brunswick posited people live in an unpredictable environment. He reasoned that relationships and what can be measured about them are based upon "behavioral achievement" (judgmental processes predicated upon an observer's lifelong observations). He created the lens model as a heuristic to describe the stages of process in which perception occurs. He identified a "distal stimulus" (the specific object or relationship an individual seeks to perceive in an external environment), but indicated the distal stimulus is not necessarily reconstructed unambiguously by an individual (e. g., a tree, which could be one that is large and far away or small and nearby). He posits the existence of "cues" (reliable indicators) which differ as to ecological validity. By an internalized set of learned probabilities an individual assesses the validity of the cues. Final behavioral achievement takes place after reconstruction of the distal stimulus by combining validity of cues and available distal stimuli. Precepts are perceived by probability and change with experience.

In violence prediction, Werner, Rose, and Yesavage (1983) state that researchers analyze dangerousness judgements and accuracy by studying the

> empirical relationship of predictive cues to the criterion variable under study, the linear relationship between the cues and the judges' predictions, the extent to which judges' use of cues parallels the cues' empirical relationship to the criterion variable and the extent to which judges' use of configural strategies in

formulating their judgments relates to their accuracy. (p. 817)

A good example of the influence of the lens theory heuristic on new generation research can be seen in the MacArthur Risk Assessment Study (MacArthur Research Network on Mental Health and the Law, 1996a; Monahan & Steadman, 1994) in which the relationships of cues (risk factors, e.g. anger, diagnosis, age), judgement (clinical prediction), and criterion (violent behavior) are employed as variables.

The risk factors for violence by persons with mental disorder are culled from emerging interrelated "mid-level" or "mid-range" theories which are not yet detailed in the literature. Mid-level/mid-range refer to theories considered to be *mid level* or *mid range* from either micro or grand theories of violence (Mulvey, personal communication, September 25, 1997) and which use observable risk factors (e. g., anger, impulsiveness, physical and sexual abuse, living arrangements, delusions, hallucinations) as variables subsumed into groupings or domains (personal, historical, contextual, clinical) to serve as risk markers for anticipating violence to other persons. The theoretical status of many of the variables is unsettled (Steadman et al., 1994).

Public Health Versus Criminal Justice

According to Monahan and Steadman (1994), the traditional legal conceptions and definitions (previously discussed) of violent and dangerous offenders and violent crime, which have influenced sociology, criminology, psychology and psychiatry, have recently been challenged by a public health perspective on violence and injury prevention in which violence is analyzed as a public health problem rather than a crime. The contrasting views are based upon differing causal paradigms and concepts of justice (Moore,1993; Moore et al., 1994; Mercy, Rosenberg, Powell, Broome, Roper,

1993).

Criminal Justice: Offender Intentions

Moore et al. (1994) posit criminal justice being focused on individual intentions, motivations, and characters of offenders, with these variables concentrated upon as the key causal factors in violent behavior. Focus is on deterrence, incapacitation, and rehabilitation. The principal cause of violent acts is seen as the intent of individual offenders. Moore (1993) indicates the philosophical and theoretical constructs of criminal justice and violence are based upon justification for punishment due to personal accountability for one's own actions, with culpability being contingent upon intent to commit injury. The characteristics of the offender considered to be paramount are intent, conduct, and prior record. The idiological basis recognizes "that society is interested in producing morally appropriate as well as practically effective responses to intentional violence" (p. 43).

Public Health: Epidemiological Approach with Victim Focus

According to Mercy and O'Carrol (1988), the public health framework applied to violence is predicated upon four interrelated empirical epidemiological in which the purpose is to locate and reduce threats to health: (a) surveillance, (b) identification of risk group, (c) exploration of risk factor, and (d) implementation/evaluation of program based upon preventive implementation. Emphasis is on identification of aggregate patterns of violence that preventive interventions might mitigate. Public health's ideological position is one that concentrates upon dealing with the root structural

causes (e .g., discrimination, poverty, unemployment), by "attacking the antecedent causes or the risk factors that shape the context of the offending rather than the motivations and values of individual offenders" (p. 43).

Influence on New Generation Research of Public Health and Decision Theory

Monahan and Steadman (1994) state new generation research is "informed" and influenced by public health and decision theory. A public health perspective can be found in the movement from the legal concept of dangerousness to the disaggregation of dangerousness into component parts of risk factors as variables, the incorporation of prevention rather than a treatment and reactive approach, and by the use of risk management as well as risk assessment as the goals of research. Brunswick's cues (risk factors) are found in the lens model theory framework of decision theory, becoming a heuristic in the new generation approaches to risk study through their usage as identifying markers or possible intervention points.

Chapter 3

A REVIEW OF THE PAST 15 YEARS IN RESEARCH METHODOLOGY: 1983-1998

Mental Disorder and Violence Predictions

This chapter will describe, analyze and critique studies and their methodologies used for the prediction of violence among people with mental disorder. The first four components of the chapter define technical terms and overview the scientific status of major research approaches and the validity of predictions generated. 1, a glossary of terms used in violence prediction will be provided. 2, the literature which considers whether the clinical or statistical approach is the most effective method utilized by researchers when making violence predictions will be reviewed. 3, studies intended to determine whether there is a relationship between mental disorder and violent behavior in general and incarcerated populations will be examined. 4, studies of mental illness as a cause of violent behavior will be explored. The fifth component of the chapter examines the scientific methods used in the recent research, synthesizes findings, and identifies future directions. Specifically, studies done in the past fifteen years based on the primary methodological models applied in the current violence prediction research will be reviewed: (a) actuarial; (b) clinical; (c) epidemiological; and, (d) meta-analyses and other forms of integrative research review. Research designs, sampling methods, measurement models, instruments and data collection will be detailed. The sixth component of the chapter consists of display tables of exemplars, key studies, and

instruments. Tables (pp. 127-148) of (a) actuarial, (b) clinical, (c) epidemiological research, and (d) meta-analyses will identify exemplars and key studies by author, year, design and data collection, subjects and sampling, data collection tool and instruments, analysis, and central findings. Finally, a table (pp. 149-151) of standardized instruments commonly used in violence prediction will identify test name, acronym, and primary citation, and purpose. For details of studies cited in this chapter, the reader will frequently be referred to the appropriate table. The tables are more inclusive of important studies than exemplars noted in the text or studies used to develop summaries and syntheses in the text.

The study of violence prediction is unique in that generations of empirical work have been punctuated by exhaustive critical reviews (Link & Stueve, 1995; Monahan, 1984, 1997; Mossman, 1994; Mulvey, 1994; Otto, 1992; Torrey, 1994). These integral reviews, along with two meta analyses (Bonta, Hanson, & Law, 1998; Mossman, 1994) will be discussed. However, primary sources prior to the year 1983 are selectively drawn upon when influential in the design of a research methodology. Very recent primary sources either not addressed in critical reviews or published after the newest syntheses, are detailed. Recent sources that were reviewed in the existing critical reviews are handled as secondary sources when the review comprehensively addresses the relationship between violence and mental health, but as a primary source when the review is limited in scope and more detailed information is required.

Glossary

Base Rate

refers to the proportion of individuals in the group being examined who can be expected to engage in violent criminality. It is the average, or "chance," rate that prediction seeks to improve upon. Prediction schemes can be evaluated either in terms of how they differentiate true and false positives or in terms of how much they improve on the base rates. [Example from Michigan parole prediction study] in which the base rate for violent recidivism among all persons released from prison was 10 percent. A prediction scale was devised that could identify one subgroup of which 40 percent committed a violent crime after release. This device, therefore, improved on the base rate by factor of 4, even though 60 percent of individuals predicted to be violent were false positives. (Monahan, 1983, p. 1172)

Cutoff Choice

institutes the true positive, false positive, true negative, and false negative rates for a test to eliminate uncertainty as to whether a subject falls into the disordered (D+) or nondisordered (D-) populations. "To interpret the test results, the clinician must pick a particular test value as an 'operating point' or cutoff for the test, a value that separates 'positive' from 'negative' test results" (Somoza & Mossman, 1992, p. 214).

Decision Rules

involve[s] choosing a "cutting score" on some predictive scale, above which one

> predicts...that an event will happen. A cutting score is simply a particular point on some objective or subjective scale....[Example] When one sets a thermostat at 68 [degrees] ...one is establishing a cutting score for the operation of a heating unit. When the temperature drops below 68 [degrees] the heat comes on, and when it goes above 68 [degrees] the heat goes off....In the context of a parole prediction, one could state that if a prisoner has a higher than X probability of recidivism, he should be denied parole for a given period. (Monahan, 1983, p. 1172)

Likelihood Ratio

is when there is a comparison of the odds of identifying a violent person in the test-positive population and a violent individual in the entire tested population.

Negative Predictive Value

is the probability of not becoming violent when the test result is negative.

Positive Predictive Value

is the probability of becoming violent when the test result is positive.

Prediction Process

consists of two assessments of each person (Monahan, 1983):

1. *Time One*: wherein categorical *predictor variable(s)* such as frequency of past violent behavior or marital status, which the researcher considers to be associated with what is being predicted, is/are used.

2. *Time Two:* a second assessment conducted with the use of *criterion variables*

to determine whether a person has or has not performed the predicted activity. Examples of criterion variables for criminal behavior "may include self-report, either arrest or conviction for certain crimes, or involuntary commitment to a mental hospital as a person dangerous to others" (Monahan, 1983., p. 1171).

Statistical Outcomes

Only one of four statistical outcomes are possible in making predictions:

1. Behavior will take place
2. Behavior will not take place
3. Predicted behavior has taken place
4. Predicted behavior has not taken place

True Positive Rate (TPR), Or Sensitivity

is established when there is a prediction that violence will take place and it does. "The positive predictive value is the probability of becoming violent when the test result is positive (computed as the number of true positives divided by the sum of the true and false positives)" (McNiel & Binder 1994, p. 582). *Sensitivity* signifies how effectively a test pinpoints patients who are violent.

True Negative Rate (TNR), Or Specificity

is established when the prediction is that violence will not take place and it does not. "The negative predictive value is the probability of not becoming violent when the test result is negative (computed as the number of true negatives divided by the sum of the true negatives and false negatives" (McNiel & Binder, 1994, p. 582). *Specificity*

signifies the effectiveness of a test in identifying unaffected individuals.

False Positive Rate (FPR)

is established when the prediction is that violence will take place and it does not.

False Negative Rate (FNR)

is established when the prediction is that violence will not take place and it does.

Selection Ratio

is the number of individuals selected as violent (e. g., exhibit physical attacks and/or fear-inducing behavior) in ratio to patients selected as low risk.

Total Predictive Value

is the likelihood that any test result will be correct.

THE CLINICAL-STATISTICAL ISSUE

Research methodology for violence prediction revolves around the clinical-statistical issue posed by Meehl (1957) in his article "When Shall We Use Our Heads Instead of the Formula?" Although at that time he stated research should use both clinical and statistical models, indicating "the best clinical research involves a shuttling back and forth between clever, creative speculation and subsequent statistical testing of empirical derivations therefrom" (p. 268), three decades later Meehl (1986) concluded decisions are preferably to be made with a formula: "there is no controversy in social science that shows such a large body of qualitatively diverse studies coming out so uniformly in the same direction" (pp. 373-374).

Overall, the literature suggests (Dawes, Faust, & Meehl, 1989; Meehl, 1954, 1986; Monahan & Steadman, 1994;Mossman, 1994; Rice, 1997; Villeneuve & Quinsey, 1995) actuarial predictions perform in a manner equal to or superior than clinical predictions. Monahan and Steadman (1994) posit that the emphasis for many researchers in violence prediction at present is on actuarial methodology in order to improve clinical prediction. Concomitantly, Monahan (1996b) cites Grisso and Appelbaum's examination of the ethics of violence prediction to indicate that the acceptance by courts and the legal system of the constitutionality of predictive violence testimony has shifted the focus of research questions from "*whether* violence can be predicted to *how* violence prediction could be improved" (p. 112).

A dissenting opinion to the general view of the superiority of actuarial over clinical methodology is found in Litwack, Kirschner, and Wack's (1993) review of research on dangerousness and predictions of violence. Litwack et al. posit actuarial methodology should be used primarily as "a check on clinical judgement" (p. 260) due to three limitations inherent in actuarial strategies: (a) meaningful base-rate information or predictive equations cannot be obtained on subjects (e. g., insanity defense acquittees, acutely dangerous) because they would require their release, (b) actuarial schemes cannot be applied to idiosyncratic cases (e. g. information pertaining to individual patients), many of whom are forensic, and (c) actuarial predictions do not sufficiently factor in "stakes" (e. g., if a new offence takes place the nature of the harm expected).

Regardless of the prediction methodologies employed, there is a consensus in reviews by Borum (1996), Monahan (1992,1996,1997), Mulvey (1994) and Torrey (1994) regarding recent epidemiological surveys and clinical and actuarial studies. The data indicate a relationship between mental illness and violence.

The research responds to two primary and interrelated questions (Link & Stueve, 1995; Monahan, 1992,1996): (a) is there empirical linkage between mental disorder and violence? (b) if so, are individuals with serious mental illness more likely to engage in violent acts than people without psychiatric disorders?

POPULATIONS: GENERAL AND INCARCERATED

Monahan (1997) states there are two generic categories through which mental disorder and violent behavior can be assessed to determine existence of a relationship between the two and if so, the relationship's strength: (a) violence among the disordered (e. g., "if mental disorder is a 'risk factor' for the occurrence of violent behavior - then the actual (or 'true') prevalence rate for violence should be higher among disordered than among non-disordered populations" (p. 300)); and, (b) disorder among the violent (e. g., "to the extent that mental disorder is a contributing cause to the occurrence of violence, the true prevalence rate of mental disorder should be higher among people who commit violent acts than among people who do not" (p. 300)). Monahan indicates that there are two kinds of research within each of the categories:

1. Individuals not selected for treatment in the general open community

population.

2. Patients in treatment in hospitals for mental disorder or inmates under treatment for violent behavior in jails and prisons.

General Populations

Monahan posits (1992) that (a) regardless of whether the samples are of jail inmates, institutional patients, or the open community, (b) irrespective of "how many social and demographic factors are statistically taken into account" (p. 519), and (c) regardless of whether the nature of the relationship is disorder among the violent or violence among the disordered, there appears to be evidence of a relationship between violent behavior and mental disorder. He cites both clinical and epidemiological studies to support his conclusion. Monahan (1992) cites clinical studies by Bloom; Karkowski, Volvaka and Brizer; Mullen; and Wessely and Taylor which support a relationship between mental disorder and violent behavior and aver "mental disorder may be a robust and significant risk factor for the occurrence of violence" (p. 519). In particular, the epidemiological studies by Link, Cullen and Andrews and Swanson, Holtzer, Ganju, and Jono are cited by Monahan as providing the "missing element" [that] "those actively experiencing serious psychotic symptoms - are involved in violent behavior at rates several times those of nondisordered members of the general population, and this difference persists even when a wide array of demographic factors are taken into consideration" (p. 517). The subsequent threat/control studies build on results of these studies "that link psychotic symptoms with violent behaviors and

attempt to specify what kinds of psychotic symptoms are associated with violence" (Link & Stueve, p. 176, 1995).

The Swanson, Holzer, Ganju, and Jono (1990) epidemiological study used a Diagnostic Interview Schedule (DIS) for interviews which was based upon DSM-III-R (1987) third edition, revised mental disorder diagnosis. Findings included (a) five times higher rates of violence among individuals meeting DSM-III-R (1987) third edition, revised diagnosis, (b) similar prevalence of violence among those diagnosed as schizophrenic, having major depression or mania/bi-polar disorder, and (c) higher prevalence rates of violence for those meeting criteria for a diagnosis of alcoholism (12 times) and abusing drugs (16 times) than persons receiving no diagnosis.

The Link, Andrews, and Cullen (1992) epidemiological method found groups of former mental patients generally two to three times as violent as the never-treated community sample. However, when current psychotic symptoms were controlled, no differences were found in rates of recent violent behavior between patients and never-treated community residents. "Even among people who had never been formally treated for mental disorder, actively experiencing psychotic symptoms was associated with the commission of violent acts...at rates several times those of nondisordered members of the general population" (Monahan, 1992, p. 517). Studies by Klassen and O'Connor (as cited by Monahan, 1992) found a 25-30 percent recurrence of violence rate within a year of discharge from a hospital for male patients who had at least one violent incident in their past. In initial data released from the MacArthur Violence Risk

Assessment Study, Steadman et al.(1994), report commitment of a violent act by one-quarter of all dischargees from psychiatric facilities within a year and twice the violence of their neighbors within their first months in the community.

Incarcerated Populations

Monahan (1992) cites studies on jail inmates and prisoners in which structured interviews were administered to stratified random samplings through the use of the Diagnostic Interview Schedule (DIS, see Table 5), allowing for comparisons across the studies and between random community samples of the National Institute of Mental Health's Epidemiological Catchment Area (ECA) study (Eaton & Kessler, 1985) and the incarcerated populations (Teplin; Collins & Schlesinger; Hodgins & Cote; Neighbors, Williams, Gunnings, Lipscomb, Broman, & Lipkowski). He summarizes their findings which validate the linkage between mental illness and violence:

> the prevalence of schizophrenia is approximately 3 times higher in the jail and the prison samples than in the general population samples, the prevalence of depression 3-4 times higher, the prevalence of mania or bi-polar disorder 7-14 times higher, and overall, the prevalence of any severe disorder (I. e., any of the above diagnosis) 3-4 times higher. (p. 518)

Torrey (1994) cites jail studies of inmates by Teplin; Guy and colleagues and Torrey, Sriever, Ezekial et al., to indicate the percent of jail admissions having schizophrenia, mania and depression to be in a range between 6.4 and 14.4. Lamb and Grant's studies of male and female inmates of the Los Angeles county jail are cited

to indicate 28 percent of the men and 18 percent of the women jailed for misdemeanors or felonies had a serious mental illness. Jemelka, Trupin, and Chiles' review of studies of state prison populations is cited which concludes "10 to 15 percent of prison populations have a major DSM-III-R thought disorder or mood disorder and need the services usually associated with severe or chronic mental illness" (p. 7).

Teplin, Abram, and McClelland (1994) conducted a six-year longitudinal study on "whether jailed detainees with schizophrenia, major affective disorders, alcohol or drug use disorders, or psychotic symptoms (hallucinations and delusions) are arrested more often for violent crimes six years after release than detainees with no disorders" (p. 335). They assessed 728 randomly selected male jail detainees (regardless of potential for violence) using the National Institute of Mental Health Diagnostic Interview Schedule. Teplin et al. examined, whether or not after release from jail, mental disorder increased likelihood of violent criminal recidivism. They found "that psychiatric disorder was irrelevant to the possibility of arrest for violent crime after release...our data do confirm, however, that irrespective of psychiatric disorder, one of the best predictors of future violent crime is prior violent crime" p. 340). Specifically, Teplin et al. indicate that their study is not supportive of "the stereotype that mentally ill criminals invariably commit violent crimes after they are released (p. 335)....In this extremely recidivistic population [almost one half in this sample of jail detainees were rearrested for violent crime], however, psychiatric disorder did not increase the probability of being arrested for violent crimes after release" (p. 340). Teplin et al.

caution that because their sample was limited to jail detainees, inferences about the association between mental health and violence in the general population should not be made.

Monahan (1997) concurs as to "the comparatively high prevalence of mental disorder among jail and prison inmates" but cautions as to "systematic bias," (p. 307), citing studies in which (a) schizophrenics have a greater likelihood of arrest at the crime scene (Robertson), and (b) police are more likely to arrest the mentally ill (Teplin). He notes the Klassen and O'Connor (1988,1989) studies to the contrary, where discharged mental patients were twice as often re-hospitalized as arrested and exhibited violence within twelve months of release. The 1989 Klassen and O'Connor study used a calibration sample (a sample used to develop predictors, risk factors, cues and to test an instrument against) of 304 subjects and a cross-validation sample of 333 subjects (121 did not meet the criteria for violence potential and represented a non-violent control group) to predict subsequent violent arrests and admissions during a one-year follow-up period. "The outcome measure of violence was arrest for a violent crime or a readmission for violence" (p. 76). Half of the violent subjects were identified in prediction, with an improvement over chance of only 13%. The researchers found that only family satisfaction, as a situational measure in both the calibration and cross-validation samples, displayed "a statistically significant relationship to subsequent violence" (p. 79). This study may not negate the overlap of mental illness in inmate populations, in that identification of violence may have been problematic due

to (a) possible denial of the history of violence by the subjects in the non violent control group, (b) over representation of blacks and unemployed in the calibration sample, but not in the cross-validation sample, with the researchers indicating "It is not possible to offer a definitive explanation for these differences" (p. 79), and (c) the high subject attrition rate which affected generalizability. Monahan concludes "an individual's status as a jail or prison inmate, is not independent of the presence of mental disorder" (p. 307).

STUDIES OF MENTAL ILLNESS AS A CAUSE OF VIOLENCE

Conclusions

Monahan (1992) concludes "evidence now indicates that mental disorder may be a consistent, albeit modest, risk factor for the occurrence of violence" (p. 511). He finds denial of an association not sustainable due to a convergence in the findings of studies and investigations despite employing "diverse measures" and "a variety of samples." Monahan (1997) posits a better than chance validity for clinical predictions of violence.

Torrey (1994) concludes, after reviewing the studies of violent behavior grouped by (a) individuals who have been arrested, (b) psychiatric inpatients, (c) psychiatric outpatients, (d) families with a seriously ill member, and (e) surveys of the general population, that

> ...although the vast majority of individuals with serious mental illness are not more dangerous than members of the general population, recent findings

> suggest the existence of a subgroup that is more dangerous. A history of violent behavior, noncompliance with medications, and substance abuse are important predictors of violence in this subgroup (p. 5).

The subgroup identified by Torrey is that of individuals with schizophrenia or bipolar disorder, in which violent acts co-occur with (a) psychotic symptoms (Taylor), (b) psychosis (David, Buchanan, and Reed et al.), (c) delusions (Taylor, Mullen, and Wessely), and (d) neurological impairment (Krakowski, Convit, and Jaeger et al.).

Mulvey (personal communication, September 25, 1997) indicates that taken as a whole, the body of research is clearly supportive of an association existing in the general population of mental illness and violence. Mulvey (1994), synthesizing recent investigations and research, makes six statements about what the research shows and does not show

1. Mental illness appears to be a risk factor for violence in the community. A body of research, taken as a whole, supports the idea that an association exists between mental illness and violence in the general population
2. The size of the association between mental illness and violence, while statistically significant, does not appear to be very large. Also, the absolute risk for violence posed by mental illness is very small
3. The combination of a serious mental illness and a substance abuse disorder probably significantly increases the risk of involvement in a violent act
4. The association between mental illness and violence is probably significant

even when demographic characteristics are taken into account. However, no sizable body of evidence clearly indicates the relative strength of mental illness as a risk factor for violence compared with other characteristics such as socioeconomic status or history of violence

5. Active symptoms are probably more important as a risk factor than is simply the presence of an identifiable disorder

6. No clear information about the causal path that produces the association between mental illness and violence is available. (pp. 663-665)

Litwack (1994), Menzies and Webster (1995), and Teplin (1990) express cautionary counterpoints to the general consensus linking mental health and violence. Litwack's conclusion after reviewing the literature is that "the research to date leaves unanswered the most important questions about the validity and legitimacy of assessments of dangerousness by mental health professionals" (p. 369). He cites as

> a central problem...that there is yet to be a study that evaluates the validity of assessments of dangerousness by a representative sample of mental professionals regarding a representative sample of patients about whom such assessments should be made...[for to do so] we would have to release from confinement, or not confine to begin with, those mentally disordered persons who are regarded as most dangerous and then evaluate the outcomes. (p. 369)

Menzies and Webster (1995) conducted evaluations of risk in a study of 162 Canadian mentally disordered criminal defendants and tracked their violent conduct for

six years after discharge from the Metropolitan Toronto Forensic Service (METFORS) Brief Assessment Unit (BAU). They determined there was no greater level of accuracy in prediction between professional and nonclinical raters. After having conducted dangerousness and risk research in relation to predictive power for 15 years at METFORS, Menzies and Webster observed critically, although finding "actuarial and instrumental factors demonstrating at least some moderate relation with outcome violence...the 'holy grail' of violence prediction is still way off" due to "comparatively slight associations between actuarial and clinical risk factors and follow up harm" (p. 775). They conclude the findings of their dangerousness and risk research of the past 15 years to be "discordant with the generally optimistic message of most recent work in the field," indicating that at best only one half of violence predictions in any of the research have been validated as accurate and that prediction models demonstrate "virtually no predictive power" (p. 776).

Teplin (1990), after reviewing 18 studies of mental disorders among jail samples indicating wide variations in the prevalence of mental disorder, stated "the prevalence rate of severe mental disorder is significantly higher in a typical urban jail than in the general population" (p. 666), but cautioned that any generalizability of the finding needed further epidemiological work.

A synthesis of the research on mental illness as a cause for violence is inconclusive. Complicating the research process is the entanglement of the mentally ill in the criminal justice system, with the concomitant intricate and complex relationship of

situational variables to mental illness and criminality. Davis (1991) in an overview of the research relating to mental illness and criminality makes the following general conclusions:

> psychiatric patients tended to get arrested at a higher rate;
>
> factors associated with offenses by mentally ill people were the same as those associated with offenses of the general public;
>
> there was no uniform rate of offending, and the high rate of offenders may not be comparable to the majority of patients; and,
>
> the problems experienced were likely a function of the system, with less accessible community resources contributing to a diversion of some mentally ill patients into the criminal justice system. (p. 174)

PRIMARY METHODOLOGICAL MODELS

Design, Sampling Methods, Measurement Models and Instruments, Data Collection and Analysis

The violence prediction studies from the pioneer, first, second and new generation studies and methodologies present a continuum of empirical research. A review of the key studies and exemplars used over the past fifteen years in the second and new generation research, examples of their methodologies, and the most current designs and instrumentation will be discussed. The range of instruments will be presented. Taken as a whole, we find "whereas studies of predictive ability focus on clinicians' rates of accuracy in predicting violence, studies of risk factors focus on

identifying the individual, historical, clinical, and contextual variables that are empirically associated with clinical behavior" (Borum, 1996, p. 947). The range of instruments are reflective of this, with (a) actuarial (see Table 1), relying on additive linear and clustering models and contingency tables analysis to examine specified populations using multivariate statistical methodology (e. g., logistic regression and discriminant function analysis), (b) clinical (see Table 2), utilizing global assessment ratings and scales in conjunction with a clinician's professional judgement and observation of individual patients to measure dangerousness to self and others, and (c) epidemiological (see Table 3), employing secondary analysis of prevalence data originally collected in sample surveys employing interview protocols that embedded standardized psychometric scales and other ad hoc items. Table 5 provides a brief description and the purpose of each standardized instrument found frequently in the studies reviewed. It should be noted that with most instrumentation, there is a focus on mental illness, psychopathology, and violence probability. This is confirmed by Bonta et al. (1998), whose findings in a meta-analysis (see Table 4) "suggest that the risk assessment of mentally disordered offenders can be enhanced with more attention to the social psychological criminological literature and less reliance on models of psychopathology" (p. 123). The purpose of this study is not to criticize the instruments, but to examine the instruments developed to predict violence. There is far more agreement and consistency in documenting mental illness than in strategies and instruments in violence prediction. The state-of-the-art in predicting violence is fluid.

Actuarial

The classic studies by Burgess and the Gluecks (as cited in Gabor,1986; Gottfredson et al., 1978) are discussed in Chapter 1 and have been reviewed and synthesized in the past. These studies examined criminal populations exclusively, with the statistical methodology used to predict recidivism amongst discharged parolees. Monahan (1997) states "actuarial techniques, however, have only recently been applied to predicting violence among people with mental disorder" (p. 309). The recent key actuarial studies and exemplars are reviewed here, with a summary table at the end of the chapter (see Table 1).

Overview

Actuarial research uses one of two methodologies (Monahan, 1997): (a) identification of factors predicting violence in the hospital, and (b) identification of factors predicting violence in the community. For studies of *inpatient violence* (see Table 1), the definitions of violence include four types: attacks on persons, attacks on objects, threats to other persons, verbal attacks on persons. Independent variables include diagnosis and context in relation to the dependent variable of dangerousness. To measure violence in the community and/or violence in the hospital, background variables include, for example, whether patients had engaged in fear-inducing behaviors and/or, physical attacks, or whether they displayed no violence prior to coming to or when in the hospital. Sample sizes range from the mid two hundreds to the mid three hundreds. Sampling procedures are based on randomly selected or

combinations of randomly and purposefully selected subjects, or participant cohorts of all patients admitted within certain dates. Subjects include patients from hospital admissions, inpatient psychiatric units, maximum-security inpatient psychiatric units or facilities, and persons at risk for violent behavior at community mental health centers.

Instruments are administered (e. g., ratings of ward behavior) by clinical staff, nurses, and physicians. Data are collected from medical, arrest and mental health center records. Instruments used include Lagos Scale (Lagos, Perlmutter, & Saexinger, 1977), Receiver Operating Characteristics (ROC, Mossman & Somoza, 1991), Global Assessment Functioning Scale (GAF, Edicott, Spitzer, & Fleiss, 1976), and Brief Psychiatric Rating Scale (BPRS, Overall & Klett, 1972). Instruments (see Table 5) are based on scales rating violent behavior, checklists of violence incidents, and indexes (e. g., phallometric indexes of deviant sexual interests). As an illustration, the Lagos scale was developed to list four categories of violent behavior: attacks on persons, attacks on objects, threats to attack persons, verbal attacks on persons. Medical records are also reviewed for evidence of violent behavior twice (2 weeks preceding admission, first three days after the beginning of the 72 hour commitment). For data analysis the four types of violence noted above are combined with levels of increasing violence (no violence, behavior inducing fear, physical attacks) to determine if there is an association between the type and level of violent behavior prior to or post civil commitment, in the community or the hospital. Analytic strategies involve (a) measuring interaction among underlying psychopathology (i.e., diagnosis), context (i.e.,

community versus hospital) and violent behavior or assault, and (b) comparison of clinical and statistical predictive accuracy. Central findings vary according to context and diagnosis, but overall patients who were violent in the community were more likely to be so in the hospital.

For studies of *community violence* the definitions of violence ranged from commission of a violent offence (e.g., assault, homicide) to readmission to the hospital for subsequent violent offenses. In many instances there were comparison groups (e.g., calibration and cross validation samples, diagnostic groups, and former patients versus unselected (never treated) community populations). In some instances both statistical procedures and clinical judgements were used with the same samples. Variables included demographics, family background, mental health contacts, past violent behavior, diagnoses, psychotic illness, substance involved. Sample sizes ranged from 250 to 1,000. Sampling procedures were mixed, including stratified, random, numerical order of resident psychiatric files, randomly selected from those consecutively admitted over a period of time, with follow ups of from six months to ten years with the same subjects. Data were collected from arrest records, mental health center records, institutional, police and parole files, as well as from self reports and interviews. Assessment instruments may have included aggression scales such as the Recidivism Prediction Scale (RPS) cited by Villeneuve and Quinsey (1995) and Quinsey, Rice and Harris (1995), the Violence Recidivism Scale (VRISK; Villeneuve & Quinsey, 1995, see Table 5), violence risk guides such as the Statistical Risk Appraisal

Guide (SRAG, renamed the VRAG, the Violence Risk Appraisal Guide, Harris, Rice, & Quinsey, 1993), and instruments such as Brief Psychiatric Rating Scale (BPRS) cited by Steadman et al. (1994) and Werner, Rose, Yesavage, and Seaman (1984) and the Global Assessment of Functioning Scale (GAF, see Table 5) as cited by cited by Steadman et al. Analytical strategies included comparison of risk of violence to later occurrence or violent recidivism, identification of threats versus actual engagement in violence, and correlations between predictor variables and actual violence. Central findings indicate that when mentally disordered persons undergo certain psychotic symptoms, they engage in violent behavior at levels several times those of non-disordered individuals.

Exemplars and key studies.

For predicting inpatient violence, the research program of Dale McNiel and Renee Binder (e.g., Binder & McNiel, 1988; McNiel & Binder, 1989, 1991, 1994; McNiel, Binder, & Greenfield, 1988) is an exemplar. Monahan (1997) cites McNiel and Binder's 1994 study (see Table 1) as "The best example of the use of actuarial data to predict violence on an impatient ward" (p. 309). For this study, McNiel and Binder (1994) reviewed results of a previous study by McNiel, Binder and Greenfield of demographic, clinical and contextual correlates of violent behavior by civilly committed acute psychiatric patients and developed a screening checklist to assess the risk of violence in newly hospitalized inpatients. McNiel and Binder (1994) created a scale consisting of five variables in which patients scoring three or higher were high risk and

two or less low risk. "Unit-item weights were assigned to all variables, which were worded so that a positive answer to each question increased the likelihood of violence (scored as a 'one'), whereas a negative answer was scored as a 'zero'" (p. 581).

1. History of physical attack and/or fear-inducing behavior within two weeks before admission?

2. Absence of suicidal behavior (attempts, gestures, or threats within two weeks before admission)?

3. Schizophrenic or manic diagnosis?

4. Male gender?

5. Currently married or living together?

The sample consisted of 338 patients hospitalized during a 20 month period in a locked, university-based, short-term psychiatric inpatient unit with a mean length stay of 18 days. The subjects selected accounted for 74% of unduplicated admissions for the time frame. Cases not selected did not have complete data (e. g., inadequate paperwork, very brief hospitalizations). Violence in the hospital was measured using the Overt Aggression Scale (OAS; Yudofsky, Silver, Endicott, & Williams, 1986), a standardized behavioral checklist (see Table 5) that was filled out by nurses for each eight-hour shift. The OAS monitored acuity by indicating "which patients have exhibited any one of several types of aggressive behavior" (McNiel & Binder, 1994, p. 581): (a) aggressive physical behavior against other people, (b) objects, (c) or themselves; or, (d) have engaged in verbal aggression. The accuracy of the screening

checklist was then evaluated with Mossman and Somozas' (1991) framework for analyzing the outcome of predictions, which measures prediction sensitivity (test will give positive result when patient in future becomes violent), specificity (negative when patient does not become violent), positive predictive and negative predictive values, total predictive values and likelihood and selection ratios.

McNiel and Binder (1994) found a 25.06% improvement over chance in classifying which patients would become physically assaultive. Monahan (1997) in examining the data, determined that when actual physical assaults were combined with threats, verbal attacks and attacks on objects, 57% of high risk and 29% of low risk were involved in violent behavior. When restricted to actual physical assault, 32% high risk and low risk 18% of low risk patients were violent. McNiel and Binder (1994) do not discuss in this study their rationale for Items 2 (Absence of suicidal behavior) and 5 (Currently married or living together) on the checklist. These variables were linked to low violence risk "in the results of a previous study of demographic, clinical, and contextual correlates of violent behavior by civilly committed acute psychiatric inpatients" (McNiel, Binder, & Greenfield, 1988., p. 581), and in earlier studies associating demographic variables with violence (Binder and McNiel, 1988; Monahan, 1981; Tardiff and Sweillam, 1980). Additionally, although Items 2 and 5 appeared to be clinically counterintuitive correlates of violence, McNiel indicates they were inversely related (personal communication, December 4, 1998). Further, in the earlier study from which they (McNiel, Binder, & Greenfield, 1988) selected the five variables, they

indicated this was done "to evaluate whether the patient characteristics associated with violence in the community and violence in the hospital were different" (p. 966) and that "classification equations...may be helpful in alerting clinicians to the relative weight to attribute to various background factors in evaluating the risk that an actually ill patient will be violent in the hospital (p. 970)." They further posited that risk assessment based on varying combinations of situational and mental status variables in conjunction with "actuarial descriptions of patient background characteristics" could "provide a useful supplement to clinical judgements of dangerousness" (p. 970) in the hospital. Taking this a step further, probability projections regarding a patient's risk of violence could be developed based on "weighted combinations" for both hospital and non-hospital clients at risk for violence.

Actuarial research on the prediction of in violence in the community can be found in the research programs of Deidre Klassen and William O'Connor (1988, 1989) and Harris, Rice and Quinsey (Harris, Rice & Quinsey, 1993; Rice, 1997; Rice and Harris, 1995; and Villeneuve and Rice, 1995). Klassen and O'Connor (1988) followed 304 male dischargees from a community mental health center for six month using 22 variables (e. g., arrest records, mental health records, situational measures such as live with parents) to predict future violence. Of those predicted to be non violent 94% were nonviolent and of those predicted to be violent 59% were violent. Harris, Rice, and Quinsey developed the Statistical Risk Appraisal Guide (later called the VRAG, see Table 5) to predict recidivism among mentally disordered offenders and found it to

be more accurate in predicting violent recidivism than clinical models such as the Recidivism Prediction Scale (see Table 5) and the Revised Psychopathy Checklist (see Table 5). A dozen variables (e. g., American Psychiatric Association (1980) Diagnostic and Statistical Manual of Mental Disorders, 3rd ed., (DSM-III) on schizophrenia, failure on prior conditional release) were used on 618 male subjects in the prediction instrument. Monahan (1997), interpreting these data states that when the VRAG scores "were dichotomized into 'high' and 'low', the results indicated that 55 percent of the 'high scoring' subjects committed violent recidivism, compared with 19 percent of the 'low scoring' group" (p. 310).

Critique

Monahan and Steadman (1994) identify four methodological problems which they maintain

> have especially plagued actuarial research...(a) inadequacy of cues or factors chosen to forecast whether violence will occur, (b) inability to determine the extent of violence within the population studied, (c) limited applicability of research designs used to validate risk factors, and (d) failure to coordinate research efforts in the field. (p. 7)

Specifically, Monahan and Steadman (1994) critique "much of the existing research on risk assessment among the mentally disordered" for employing a "very narrow range of cues and variables" (p. 7). They challenge those measures previously used in research such as "the Brief Psychiatric Rating Scale, or past history, or a

psychological test" for "being chosen without conscious regard for any theory of violent behavior or of mental disorder" (p. 7). They suggest that variables and cues should reflect (a) incorporation of situational/conditional risk factors (e. g., aftercare, clinical recommendations such as time spent with friends), (b) DSM IV (1994) fourth edition diagnostic criteria (e. g., diagnostic change), (c) factors in multiple domains (e. g., dispositional, historical), and (d) the development of measures which are relevant to violent behavior and assess risk factors that presently do not have measures (e. g., anger control). They critique patient personality functioning classification systems used among the mentally disordered as being "woefully inadequate" for lumping together "psychotic versus non psychotic groups or comparing schizophrenia with all other diagnoses" (p. 8). They suggest improving research designs and instruments by (a) development of standardized instruments"to measure specific types of self reported violence and...violence reported by significant others" (p. 9), (b) testing in the community new procedures to find discharged patients, such as the use of collaterals and key informants (e. g., family members, friends, subject nominees) in order to ensure aftercare to released patients and compliance with continued usage of psychotropic medications, (c) testing criterion variables on subjects repeatedly over long periods of time at designated intervals, (d) recording both arrests and rehospitalizations caused by violence, and (e) synchronizing research by the use of multidisciplinary teams at multiple research sites using "common predictors and criterion variables and a common research design" (p. 12).

In response to their own critique, Monahan and Steadman (1994) were instrumental in the development of the MacArthur Risk Assessment Study (Steadman et al., 1994), which employs actuarial approaches in (a) studying 951 acute male and female discharged civil patients from three acute civil hospital facilities, and (b) a comparison sample of 519 non-patients from one site. The process for the study involves four phases: (a) a review of existing instruments and development of new instruments relating to violent risk, (b) a pilot field study of a "provisional research design," (c) data collection for the MacArthur Violence Risk Assessment Study and the MacArthur Community Violence Risk Study (see Table 1), and (d) analysis and interpretation of data and distribution of findings.

Field trials were used to overcome the methodological problems identified in their critique (Steadman et al., 1994). Variables used (risk factors) cover four domains of baseline data: (a) dispositional (e. g., demographics such as age, race; social class; personality such as anger control); (b) historical (e. g. family history, work history, mental hospitalization history, history of violence, criminal and juvenile justice history; (c) contextual (e. g., social supports, social networks, stress, stressors such as presence of weapons); and, (d) clinical (e. g., types and symptoms of mental disorder, personality disorder, drug and alcohol abuse, level of functioning). The variables in the domains are "actuarially associated with violence occurring in the community, measured during the interviews with the patients and a collateral that occur five times over the course of a one-year post-release follow-up, as well as official arrest and

mental hospitalization records" (Monahan, 1997, p. 318).

The MacArthur Risk Assessment Study (Steadman et al., 1994) , developed a protocol of "state-of-the-art" instruments to measure five factors as risk markers of violence: social support, impulsiveness, anger control, psychopathy, and delusions. The instruments include a short version of Hare's Psychopathy Checklist (PCL) to predict violence, the Barratt Impulsiveness Scale (BIS), the Maudsley Assessment of Delusions Schedule (MADS), and the Novaco Anger Scale (NAS). Assessment instruments used included: the Diagnostic Interview Schedule (DIS), the Brief Psychiatric Rating Scale (BPRS), which was field tested in conjunction with a broad array of assessment instruments to address the limited range of predictor variables identified in previous research, and the Global Assessment Functioning Scale (GAF). In hospital data collection, (a) the DSM-III-R (1987) third edition, revised checklist was used to confirm medical record diagnosis, (b) the Structured Interview for DSM-III-R Personality was used to confirm personality disorder when Axis I diagnosis was absent, and (c) the Michigan Alcoholism Screening Test (MAST) and the Drug Abuse Screening Test (DAST) were administered to patients at each follow up. For the community sample (Pittsburgh), MAST and the DAST were administered to the comparison group, but not the DSM-III-R checklist.

The Network (MacArthur Research Network on Mental Health and the Law, 1996b) has now released early conclusions from the study (Steadman et al., 1998):

Results: There was no significant difference between the prevalence of violence

by patients without symptoms of substance abuse and the prevalence of violence by others living in the same neighborhoods who were also without symptoms of substance abuse. Substance abuse symptoms significantly raised the rate of violence in both the patient and the comparison groups, and a higher portion of patients than others in their neighborhoods reported symptoms of substance abuse. Violence in both patient and comparison groups was most frequently targeted at family members and friends, and most often took place at home.

Conclusions: Discharged mental patients do not form a homogeneous group in relation to violence in the community. The prevalence of community violence by people discharged from acute hospital facilities varies considerably according to diagnosis and, particularly, cooccurring substance abuse diagnosis and symptoms. (p. 393)

Link and Stueve (1998) indicated that assuming the findings of MacArthur and all study types (a) retrospective, (b) prospective, and (c) epidemiological, were valid, this "suggests that people with certain types of mental disorders or symptom constellations have a modestly elevated risk for violence, and that this risk is most evident when symptoms are acute" (p. 403). Link and Stueve posited violence risk is highest when patients are "relatively symptomatic," just before, during, shortly after, being in a mental hospital, but the risk violence is the same as the community base level in the year after hospitalization and treatment as a consequence of declining

psychiatric symptoms.

Prior to the release of any comprehensive data from the MacArthur study, Litwack, Kirschner, and Wack (1993) cautioned that the MacArthur Risk Assessment Study (Steadman et al., 1994), while it would provide important information on the assessment of the dangerousness of released mentally ill patients, had limitations. Specifically, (a) the study is focused on release decisions, but "does not address the validity of clinical assessments of dangerousness leading to confinement" (p. 269), and (b) the "crucial variable" of pre-release assessment of a patient's willingness to go along with out-patient treatment recommendations (e. g. medication) is not addressed.

Steadman et al. (1994) admitted selection of variables for the MacArthur study was not based upon a "a fully articulated and validated theory," but by cues validated as risk factors in current research literature. Though such an approach ignores the deductive process of variable selection and the possibility of a universal linking theory of violence causation, the MacArthur researchers countered by stating they were interested in a broader and more inclusive approach and that development of a grand theory in the near future is implausible. This has led to another trade-off: breadth versus depth. MacArthur is focused on five markers of risk: social support, impulsiveness, anger control, psychopathy, and delusions. This comprehensiveness is made at the expense of paying thorough attention to a particular risk factor.

Subsequent to the release of initial data from the MacArthur Study (Steadman et al., 1998), the methodology has been critiqued by Satel and Jaffe (1998) on three

grounds

1. the study was limited to acute-care hospitals even though (29%) of the patients refused to participate and a disproportionate number were schizophrenic. Further, as of all patients half were successfully treated and released within nine days and only one out of ten patients remained longer than thirty days, this "eliminated anyone too sick to be stabilized acutely...reducing the chance of including non-psychotic individuals" (p. 37).

2. the study limited the definition of violence "only to those acts which produced bodily harm [against others]" and employed the "broad category [e. g., such as depression, whose sufferers rarely commit violent acts against others] of mental illness rather than the narrow category of psychosis" (p. 37). In that 40% of the sample were diagnosed as depressed, and the depressed rarely commit violence against others, this biases the results. Torrey is cited as stating "while purporting to study violence, the first thing the authors did was omit violent people from the study" (p. 37).

3. the choice of a violence-prone control group in a high crime area "minimized the violence differential between the patients and the control group" (p. 37).

Clinical

The five classic studies in clinical prediction (Cocozza & Steadman, 1976; Kozol, Boucher, & Garofalo, 1972; Steadman, 1977; Steadman & Cocozza, 1974; Thornberry & Jacoby, 1979) were reviewed in Chapter I. Subsequent exemplars and key inpatient and community clinical studies follow, with a summary at the end of the

chapter (see Table 2).

Overview

Whereas, actuarial approaches predict an individual's behavior on the basis of comparison to how others have acted in similar situations or to members of violent groups, clinical prediction is based on clinical observations of individuals based on expert judgement. Monahan (1981) cites Elstein as indicating "actuarial approaches use *automatic* or *mechanistic* decision rules that involve mathematical manipulation of the data...while clinical approaches tend to rely more upon an *intuitive* or subjective combination of the factors deemed relevant" (p. 96). Gabor (1986) indicates while actuarial systems use uniform criteria in all cases, clinical methods in contrast are holistic and concentrate on the total personality. Clinical prediction studies are prospective.

Limandri and Sheridan (1995) cite Benner, Harbison, and Schon's research as identifying three major models for clinical prediction:

1. Linear/rationalist
2. Hypothetico-deductive
3. Risk assessment

Limandri and Sheridan (1995) indicate linear models are largely used when there are forensic implications, with decision trees or critical pathways employed as clinical guides "when making decisions that have legal ramifications" (p. 4). The strength of the model is that the clinician is provided "clear direction" through the use of

an objective, logical instrument; the weakness of the model is that it is formula driven, with limited attention given to "contextually relevant information...factors such as treatment outcomes, social support, and stabilization of stress are not considered in making the decision" (p. 6).

By contrast, Limandri and Sheridan (1995) state the hypothetico-deductive model is more contextual than the linear. They cite Regan, Kubinski, and Schon that Clinicians employ patient past experiences to develop cue patterns and categories. "The expert is searching for a 'pivotal cue' to frame all of the cues and to link with extensive theoretical and experiential knowledge....[e. g.,] potential for dangerousness" (p. 7). Additional cues, clustering of the cues, and finally the arrangement of the cues into hypotheses (e. g., diminutive size, use of drugs, rejection by parents) lead to a judgement (e.g., the patient has poor self image and relationship problems at home) and a plan (specific action steps) to resolve or deal with the stressors influencing the potential dangerousness.

The risk-assessment model was developed by Gottfredson and Gottfredson (1988). Limandri and Sheridan (1995) state this model develops markers or risk factors by a

> risk-to-stakes matrix wherein the seriousness of the action is weighed with the likelihood of repetition. Seriousness permits the assessor to consider types of harm possible across a multitude of variables. Alcohol and drug abuse, for example, may influence the likelihood of harm, as well as might a history of

violence...Such a model incorporates the social and political climate, as well as well as the individual's internal climate...and permits clinicians to weigh both the environmental and personal factors present in any given situation. (p. 8)

The clinical approaches to the study of risk (see Table 2) include (a) clinical decision-making and judgement relating to inpatient institutional violence, and (b) clinical prediction of community violence. The definitions of violence for institutional studies are difficult to compare in that there are great variety of settings, from general psychiatric to forensic hospital. Only one study relating to the "validity of clinicians" to predict community violence was published between 1979 and 1993 (Monahan, 1997). The most significant subsequent study (Lidz, Mulvey, & Gardner, 1993) in clinical prediction of violence used the concept, physical dangerousness to others (e. g., laid hands on another person or threatened someone with a weapon) as the definition of violence. Variables used in clinical studies include demographic, diagnostic, and arrest information, with these analyzed in relation to the accuracy of individual (analyzing forecasts made by each judge) and/or composite (computed for each professional group, psychiatrists and psychologists, and the total set of judges) predictions.

Sample sizes have ranged from 40 to over 400 patients, with individual and composite ratings by clinicians. Samples have been generally random by availability and/or consecutive admissions to hospital emergency rooms or as inpatients over set time periods, but when comparison groups were used, one group included inmates on a psychiatric unit or in a correctional institute who had demonstrated violence and one

group who had not. In these situations, groups have been selected after intake workers, nurses, case managers, or clinical assistants had rated them as violent/non violent. Subsequently, what was being examined was the ability of clinicians to accurately predict violence with each type of group. Data were collected by on site researchers from medical transcripts of interviews by clinicians and attending physicians, hospital forms and hospital records or notes in charts by nursing staff which attested to potentially high assaultiveness or violent adjustment (e. g., seclusions, restraints, assaults on persons or property, threats or fear inducing behavior). Community violence (indicated by incidents of patients laying hands on one another or threats with a weapon) was captured by patient self reports, collateral reporting, and official records. Analytical strategy involved comparison of individual and composite accuracy of clinician predictions of violence/dangerousness to self or others over short or long periods of time while in an institution or the community. Standardized Instruments included indicators of mental disorders such as the Indicators of Mental Disorders Scale (Segal, Watson, Goldfinger, & Averbuck, 1988b) and clinical psychiatric rating scales such as the Brief Psychiatric Rating Scale as cited by Werner et al. (1983) ; Werner et al. (1984). Central findings indicate a better than chance ability by a clinician to predict violence.

Exemplars and key studies.

A number of studies examined clinical judgement relating to *inpatient violence*. Werner, et al. (1983) used individual and composite scores for 15 psychologists and 15

psychiatrists to predict whether 40 male patients admitted to an acute-care psychiatric unit would engage in assault during the first 7 days on the unit. Predictions of violence were made based on 18 variables assessed at admission based on scales of the Brief Psychiatric Rating Scale (BPRS, see Table 5) used as forecast cues (e. g., hostility, disorientation, uncooperativeness). Cue-utilization analysis of composite predictions by Werner et al. of this patient sample found correlates of violence to include absence of emotional withdrawal and hallucinatory behavior. Werner et al. (1984) used data consisting of the 18 scores of the BPRS scores used as admission criteria in combination with an additional admission criteria (a 19th variable) indicating that violence was a precipitant for being hospitalized, to assess predictions by 15 psychiatrists for 40 males at the same psychiatric intensive care unit. Though not stated, it appears as though data for the same 40 male patients from the same 15 psychiatrists in the first study were used, as the DSM-III (1980) third edition diagnoses and data percentiles for patients were identical to those in the first study. Doctors were asked to predict whether a patient would be violent within the first seven days of being hospitalized. Composite predictions (predictions were pooled and computed for each of 40 cases as a percentage of psychiatrists who rated the patient as violent) were made for each of the 40 patients. They found a potential for violence in patients wherein combined hostility and agitation were associated with paranoid ideation and were present where earlier assaultiveness was a factor in admission. However, Werner et al. found only a "small correlation between actual violence and the

psychiatrists' predictions [which] may be the result of psychiatrists' emphasizing cues other than those in fact most predictive of violence" (p. 265). Cooper and Werner (1990) developed a methodology for ten psychologists and 11 case managers to use in a federal prison to predict the likelihood of a violent act by an inmate within 6 months of imprisonment. They used 17 demographic and biographical variables (e. g., race, sentence length, number of prior arrests) as cues. The process involved using

> a dichotomous classification scheme (violent vs. not violent, coded 1 and 0 respectively)...[with] composite predictions...computed for each inmate as the percentage of judges predicting violence. Judges also indicated their confidence of certainty in the prediction made for each inmate, measured by percentage points above chance on a scale ranging from 50% to 100%... outcome variable was the actual occurrence of violent behavior or not violent behavior. (p. 434)

For composite psychologists' predictions, four cues were found to have statistically significant relationships with predicted and actual violence: current offense, history of violence, severity of current offense, and race, with the greatest violence potential for blacks and American Indians. For composite case manager predictions, five cues were found to have statistically significant relationships: current offense; history of escapes or attempted escapes; history of violence; number of prior arrests; and, number of prior convictions. However, "professional' forecasts of inmates' [actual] violence showed low accuracy...[and] may have resulted because professionals failed

to weight these factors optimally" (p. 431).

Segal et al. (1988a, 1988b) conducted studies of decision-making by observers (clinical social workers) and clinicians (psychiatrists, psychiatric technicians, social other professionals, paraprofessionals, unlicensed professionals) relating to *violence in the community* of 251 cases at five mental hospital psychiatric emergency rooms. Their studies dealt with three fundamental questions, which those opposed to the use of dangerousness criteria have raised:

> (1) the extent to which clinicians employ a shared professional standard in evaluating patients' dangerousness;
>
> (2) the relationship between mental disorder and perceived dangerousness in patients evaluated for hospital admission; and,
>
> (3) the effect of this relationship on admission decisions and the character of the acute-care population. (Segal et al., 1988a, p. 748)

To define and measure concepts of dangerousness, the observers used the 88-item index Three Ratings of Involuntary Admissibility (TRIAD), and the clinicians the Clinician's Global Ratings (CGR) of patient dangerousness, and the Indicators of Mental Disorders Scale (IMDS). The TRIAD (see Table 5) is an index of indicators which measures clinical interpretation and application of criteria "danger to self," "danger to others," and "grave disability" to mental illness. "The TRIAD scale scores were computed by finding the standard pattern on each scale that included the items checked at the time of disposition. If more than one pattern applied, the one that

yielded the highest score was chosen" (Segal, et al., 1988a, p. 749). As an illustration, although on the danger-to-others scale, threatened to harm others may have a moderate score, the "threat may yield a higher score" if it takes place in conjunction with other items (e. g., provocation, history of assault. The CGR (see Table 5) is an independent rating made by each clinician immediately after making a disposition decision on a case. The IMDS (see Table 5) was used to measure "discrete manifestations of mental disorders." They found "Overall perceived dangerousness scores on both TRIAD and the CGR were positively related to all symptom types except depression and anxiety" (Segal, et al., 1988b, p. 758). Irritability and Impulsivity were found to be the symptoms most related to potential danger to others. Impulsivity in particular was most associated with perceived dangerousness. In terms of community violence, Segal et al. (1988b) determined

> what our findings do indicate is that the phenomena to which clinicians respond in estimating dangerousness covary with symptoms and diagnoses in psychiatric emergency referrals. Thus, the most severely ill among psychiatric emergency room referrals are also those perceived as most closely fitting the dangerousness criteria for commitment. (758)

Segal et al. (1988a) conclude that clinicians in California's psychiatric emergency rooms apply a shared concept of dangerousness that can be described in behavioral terms" (p. 748).

In the late 1980s and the early 1990s data collection methodologies of Lidz,

Mulvey, Appelbaum, and Cleveland (1989); Gondolf, Mulvey, and Lidz (1990); Apperson, Mulvey, and Lidz (1993) used (a) the speedwriting method of trained observers who recorded near verbatim transcripts of observed patient/clinician interviews and interactions in emergency rooms for systematic analysis, and (b) independent clinician ratings (e. g., Likert type scales such as the 7-point clinical ratings of 12 patient characteristics (e. g., chronically dangerous to others, currently suicidal), an adaptation of the Conflict Tactic scales (see Table 5) as cited by Gondolf, Mulvey, and Lidz (1990), and ratings of potential aggressiveness such as Clinician's Global Ratings (Segal et al., 1988a). Monahan and Steadman (1994) indicate "While a patient's history of violence was the best predictor of clinician ratings [of current dangerousness), patient hostility and the presence of serious disorder also correlated highly with clinical assessments of current dangerousness" (p. 4), as found in research programs such as those by Werner et al. (1984) and Segal et al. (1988a, 1988b).

Apperson et al. (1993) critique the outcome measures used in clinical short-term prediction studies, which they list but do not document (e. g., seclusions, restraints, assaults on persons, assaults on property, and threats or other fear-inducing behaviors). They cite studies by Rofman et al.; Janofsky et al.; Rofman, Askinazi and Fant; and Brizer et al. which assert that the outcome measures have "inherent problems" because (a) such measures are too inclusive, (b) violent acts are under reported in clinical records, and (c) assaultive acts in inpatient units are often unnoticed or unreported by staff. They conducted a study into accuracy of clinical prediction by

examining different methods of prediction and found accuracy varied substantially depending on

> how researchers settle four basic methodological problems: 1) characterization of the clinical prediction...a clinician's statement that a patient may be dangerous to others if left in the community does not necessarily mean that the clinician is predicting that a patient will be violent on an inpatient unit,...2) selection of an appropriate comparison group, 3) choice of outcome measures, and 4) determination of the time period allowed for the outcome to occur. (p. 1375)

Only one study, by Sepejak, Menzies, Webster, and Jenson (as cited in Monahan and Steadman, 1994; Monahan, 1997), was conducted between 1979 and 1993 to examine clinical validity as to predicting violence in the community. Sepejak et al., in assessing court-ordered pretrial mental health assessments found that 39% of those with ratings by clinicians indicating medium or high likelihood of dangerousness to others had within a two year period committed subsequent violent acts. A recent study by Lidz, Mulvey, and Gardner (1993) is considered to be "what is surely the most sophisticated study published on the clinical prediction of violence" (Monahan, 1997, p. 308; Monahan and Steadman, 1994, p. 5). The study took place in a metropolitan psychiatric hospital, with two samples (357 pairs) of psychiatric patients, matched on age, race, sex and admission status, who were followed up for six months in the community. One group included persons assessed by the clinicians in the psychiatric

emergency department as being likely to engage in violence during follow up, and the other was a comparison group of patients "that received no concern about violence from either staff member" (p. 1008). Violence for both groups was measured through self-reports, review of official records, and collaterals. A violent incident was defined as occurring when a patient had (a) laid hands on another individual with violent intent, or (b) threatened another person with a weapon. The study:

> assesses the level of predictive accuracy that clinical judgement adds over and above that achievable by consideration of basic actuarial characteristics of the patient....compares the accuracy of clinical judgement across patient groups segregated according to demographic variables thought to be related to violence (p. 1008).

Violence during follow up was 45%: 36% in the comparison group and 53% in the cases predicted to be violent. Race and age had little effect on clinical predictions; however, patient gender may have. Clinical accuracy in predicting violence among men was 63% for sensitivity and 60% for specificity, significantly better than chance. (That is, 63% of men expected to be violent were so; 60% of men *not* expected to be violent were, in fact, *not* violent). For women, sensitivity was 54% and specificity 53%, values statistically insignificant from 50%. Lidz et al. indicate that clinicians' poorer predictive accuracy of violence with women patients may be due to their (a) underestimating its prevalence, and (b) failing to identify cues differentiating those women who might be violent.

Critique

Litwack (1994) cautions as to the limitations of Lidz, Mulvey, and Gardner's study. He points out that clinical judgement can be questioned, as 47% of those predicted-violent, despite intensive follow up, were found not to be violent. Additionally, he indicates as there was no comparison between clinicians and lay judges in the study; no "special ability" could be ascribed to them in assessing violence. Additionally, Litwack quibbles with the semantics employed. Specifically, he finds the term "predicted-violence" to be misleading, in that "the clinicians in this study were not 'predicting" which patients would be violent, but rather rating their *potential* for violence" (p. 372). Litwack's critique appears contrary to the stated definition of violence employed by Lidz, Mulvey, and Gardner of a violent incident being when official record, patient, or collateral documented a patient laid hands on another with violent intent or threatened another with a weapon.

Monahan states (1981) there are four common errors in clinical prediction

1. Lack of specificity in defining the criterion of violence or dangerousness. "Some specification of a criterion...is essential if prediction is too succeed...the more inclusive the definition, the greater the predictive accuracy " (p. 58).

2. Ignoring statistical base rates. The base rate refers to "the statistical prevalence of violent behavior in a given group, that is the frequency with which violence is committed in a given time period (usually 1 year)" (p. 59). Identifying accurate base rate data is important to ensure there is no misunderstanding or

misleading information as to accuracy of prediction (e. g.,"if only 5% of the subjects are violent, a clinician who predicts 'no violence' would be right 95% of the time, whereas a clinician who errs on the side of caution and predicts violence 20% of the time can be correct [with] about no more than 85% of the subjects" (Mossman, 1991, p. 783).

3. Illusory correlations, in which a phenomenon occurs wherein clinicians correlate or associate relationships based on bias rather than what was actually observed (e.g., where subjects are told there is an association prior to testing and find it even though none exists).

4. Failing to incorporate environmental information. There has been an almost exclusive dependence on dispositional variables or personal traits (e. g., age, race, prior criminal record) while ignoring environmental/situational characteristics (e. g., family, job, peer environment, continued usage of psychotropic medication as part of aftercare) and influences on a person's likelihood to commit a violent act.

According to Borum (1996), standardized instruments will improve reliability and validity of risk judgements. He cites Webster, Eaves, Douglas, and Wintrup "'the great challenge in what remains in the 1990s is to integrate the almost separate worlds of research on the prediction of violence and the clinical practice of assessment. At present the two hardly intersect'" (p. 947). He identifies four instruments for improving clinical risk assessment technology

1. The Dangerous Behavior Rating Scheme (DBRS, see Table 5). This uses 11 items (e. g., rage, anger, tolerance, guilt) and is rated on a seven-point Likert scale

influenced by Megargee's theoretical framework for assessing dangerousness and uses global assessment measures of self, others, at present and the future. Hampering the validity of the instrument is that clear operational definitions are lacking for each item, "however, the idea of having a theoretically driven, reliably rated, semistructured interview for dangerousness assessment marked a conceptual advance for assessment technology" (p. 949).

2. The Violence Prediction Scheme (combining factors that are actuarial and clinical). The actuarial element uses 12 variables (e. g., victim injury, schizophrenia based on DSM-III (1980) third edition criteria, failure on prior conditional release) based on the Violence Risk Assessment Guide (VRAG). The VRAG items are then combined with a 10-item clinical element, the ASSESS-LIST (e. g., social and psychosocial adjustment, symptoms, see Table 5). Because the actuarial component is derived from individuals with a prior serious offense, Borum cautions not to generalize to other populations.

3. The HCR-20 (see Table 5), a check list guide which uses 20 historical (e. g., previous violence, alcohol or drug abuse, mental disorder), clinical (e. g., insight, attitude) and future risk (e. g., access, support and supervision) items to assess risk of violent behavior.

4. The Spousal Assault Risk Assessment Guide (SARA), a 20-item checklist with four sections: criminal history, psychosocial adjustment, spousal assault history, and current offence. The checklist is used to assess the future risk of violence from

spouse abusers.

Critique

Although the instruments cited by Borum are an advance in the risk assessment technology available to researchers and clinicians, much additional testing with them needs to be made to ensure their reliability. The HCR-20 is still in its initial stages of testing. The VRAG was utilized with a specific population (significant prior history, serious recorded offence) and it is questionable if its findings can be generalized.

Epidemiological

The importance of epidemiological studies is that their representative community samples suggest the mentally disordered are engaged in violence at levels several times those of the general population (Monahan, 1997). Epidemiological studies utilize populations with unselected (probability samples of never treated community residents, e. g., disordered people never selected for treatment) samples from the open community and are used to augment the studies of institutionalized populations of criminal offenders, which may have biases (e. g, using identified criminal offenders suggests greater likelihood of arrest and imprisonment) when employed in assessing the correlations between violence and mental illness. Mechanic (1999) states an "epidemiologist distinguishes *incidence* (the number of new cases that occur during a particular interval) from *prevalence (*all cases existing during a particular period of time)" (p. 47). Prevalence provides information relative to the totality of need or "magnitude" of the designated problem, while incidence has greater value in examining causation. It should be noted that the epidemiological violence prediction studies consist of secondary analyses of large studies of psychological disturbance and related

variables in populations.

Overview

Epidemiological studies involve two types (a) large scale sample surveys, whose data are then used for analysis in secondary studies, and (b) prospective designs, which include multiple data collection approaches. Oftentimes, studies in the chapter will overlap, as the key epidemiological studies are placed in historical perspective and context as they reflect either the primary studies or design type. Mechanic (1999) cites the evolution of instruments used in epidemiological studies to measure mental illness. During World II, the Army Neuro-Psychiatric Screening Adjunct was used with soldiers to screen for psychiatric breakdowns. After the war the instrument was adapted to assist in the development of measures used to examine impairment. Subsequently, the Langner Scale (22 items) was developed to distinguish between normal and treated psychiatric populations. More recently, Mechanic cites two more sophisticated instruments: (a) The Center for Epidemiological Studies Depression Scale (CESD), and (b) The General Health Questionnaire. (GHQ).

The two most significant large scale epidemiological studies used as sources of data bases for secondary studies are (Mechanic, 1999): (a) the Epidemiological Catchment Area Program (ECA) study of the National Institute of Mental Health; and, (b) the National Comorbidity Survey (NCS), a study congressionally mandated to extend the ECA. The ECA (Eaton & Kessler, 1985) involved 20,000 subjects at five locales: New Haven, Baltimore, Saint Louis, Los Angeles, and Durham. The study

used the Diagnostic Interview Schedule (DIS, see Table 5), which is based on DSM-III (1980) third edition criteria and provides a provisional diagnosis. Obtained were prevalence rates for mental disorders, etiology for specific disorders and relationships to demographic information. The NCS (Kessler et al., 1994) was funded and mandated by Congress to expand upon the ECA survey by taking a representative sampling of the civilian population of the entire United States between the ages of fifteen and fifty-four who had not been institutionalized. Structured diagnostic interviews were conducted using the Composite International Diagnostic Interview (CIDI), compatible with the DSM-III (1980) third edition, DSM-IV (1994) fourth edition and ICD criteria.

A discussion of the key recent epidemiological studies examining the relationship between mental illness and violence follows, with a summary including those of classic earlier related studies at the end of the chapter. Recent exemplars of community populations and jail populations are displayed in Table 3. Variables include prevalence rates of schizophrenia and major affective disorder by age and race, prevalence of psychiatric disorder among those who reported violence and patterns of violence by diagnosis, psychotic symptoms that explain the disorder and violence relationship. Sample sizes range from community samples of 375 to jail samples of 728 to multi state samples ranging in size from between 3,481 to 10,059. Sampling procedures differ, from stratified random sampling of jail detainees to comparisons of community residents who had never been involved with the mental health system and former mental health patients. Epidemiological survey data are collected by interviews.

DSM-III (1980) third edition or DSM-IV (1994) fourth edition diagnosis is scored from interview data by computer program written expressly for this purpose, self reports, and psychiatric assessments. Data collections are from the epidemiological surveys gathered by interviews, DSM-III (1980) third edition diagnosis scored from interview data by computer program written expressly for this purpose, self reports, and psychiatric assessments. Instruments are based on diagnostic interview schedules based on DSM-III (12980) third edition diagnosis and epidemiological tables. "To obtain prevalence rates of specific mental disorders and to examine their relationship to demographic factors, family history, life events, and neurobiological variables" (Mechanic, 1999, p. 52), the DIS is used for DSM-III (1980) third edition criteria and the CIDI to make diagnostics consistent with DSM-III (1980) third edition and DSM-IV (1994) fourth edition criteria in the ECA (Eaton & Kessler, 1985) and the NCS (Kessler et al., 1994) primary studies. Secondary studies (e. g., Link et al., 1992) further "applied sophisticated multivariate controls reflecting sociodemographic differences and differences in social context, as well as...for social desirability response bias" (Mechanic, p. 241). Analytical strategy examines patterns of violence by disorder, kinds of psychotic symptoms associated with the mental disorder and violence relationship, diagnostic groups measured against recidivism, and jail and hospital prevalence rates of violence compared with the general population. Central findings indicate there may be a association between mental patient status and violent behavior and that the mentally disordered appear to engage in rates of violent behavior

several times higher than those in the general population.

Exemplars and key studies.

Since 1990 there have been four key epidemiological studies conducted emphasizing the linkage of mental illness and violence to specific symptoms and factors: (a) Swanson, Holzer, Ganju, and Jono (1990), (b) Link, Andrews and Cullen (1992), (c) Link and Stueve (1994), and (d) Swanson, Borum, Swartz, and Monahan (1996).

These epidemiological researchers conducted secondary analyses drawing their data from large scale epidemiological studies (e. g., The ECA (Eaton & Keller, 1985) study of adult household residents, selecting from three of the five sites; Baltimore, Durham and Los Angeles; and the Dohrenwend, Shrout, Egri, and Mendelsohn (1980); Dohrenwend, Shrout, Link, Martin, and Skodal (1985) research into adults from the Washington Heights area of New York City)). It should be noted that although the ECA survey dealt with general population figures, it included interviews using the Diagnostic Interview Schedule (DIS) as cited in Swanson (1994) and Monahan (1997) enabling secondary epidemiological researchers to subsequently focus on violence and psychiatric disorders. Additionally, the Washington Heights study, an epidemiological study dealing with psychiatric patients and community residents, used a Psychiatric Epidemiology Research Interview (PERI, see Table 5) instrument as cited in Monahan and Link and Stueve (1994) to capture symptoms, measures of recorded arrests, and self-reported arrests. Definitions of violence in the ECA study are based on violence

indices composed of four DIS items pertaining to assaultive behavior that identify anti-social personality disorder (ASP) and a fifth item, fighting while drinking, in the diagnostic area pertaining to alcohol abuse and dependence disorder. Link and Stueve in their psychotic symptoms study based on the PERI instrument identified violence/illegal behavior as hitting, fighting, and weapon use.

Swanson, Holzer, Ganju, and Jono (1990) conducted a seminal study with data from the ECA (Eaton & Kessler, 1985) study. Data from 10,000 people were pooled using representative weighted samples from adult households. Mental disorder was determined based on the DIS. Violent behavior was identified through five questions in the DIS related to antisocial personality disorder and alcohol abuse/dependence (e. g., Have you ever used a weapon like a stick, knife, or gun in a fight since you were 18?). The prevalence findings for violence were (a) five times higher among DSM-III (1980) third edition diagnosed, (b) similar among those diagnosed for schizophrenia, major depression, or mania/bi-polar disorder, and (c) twelve times higher for diagnosed alcoholics and sixteen times for substance abusers.

Link, Andrews, and Cullen (1992) used the Psychiatric Epidemiology Research Interview (PERI) to measure symptoms and life events, using a sample of 386 adults who had no history of assistance from mental health professionals or any placement in a mental health facility (see Table 3, Epidemiological). They used three lifetime assessments of arrest (official arrest, self-reported arrest, self reported ever hurting another person badly) as measures of violent behavior. Rates of arrest and

self-reported violence of a never-treated group (N=386) were compared to samples of former mental health patients from their vicinity consisting of first-treatment contact patients (N=83), repeat-treatment contact patients (N=173), and former patients (N=111). Multiple factors were controlled (e. g., age, gender, and socioeconomic status) to ensure there would be no alternative explanations for data ("to test whether the elevated rates among mental patients are due to their sociodemographic characteristics and social context rather than their mental illness" (Link & Stueve, 1994, p. 148). They found a violence level for former patients two or three times greater than for those who had not been treated. Most significantly, they found when psychotic symptoms were controlled, no differences existed in the rates of violent behavior between former patients and the never-treated. They concluded that there was an association between psychotic symptoms and violent acts.

Link and Stueve (1994) conducted a reanalysis of the data from Link et al. (1992) to determine which psychotic symptoms best correlated to mental illness and violence in association with three measures of violent/illegal behavior: hitting, fighting, weapon use. They indicated that three threat control\override-symptoms on the psychotic symptoms scale best explained the mental disorder/violence association:

During the past year...

1. how often have you felt that your mind was dominated by forces beyond control?
2. how often have you felt that thoughts were put into your head that were not

your own?

3. how often have you felt that there were people wishing to do you harm? (Link & Stueve, 1994, p. 144).

Link and Stueve (1994) found when self-control was removed or there was a belief of threat there was a greater likelihood of violence. They predicated the threat/control-override symptoms on the concept of "rationality-within-irrationality," in which fears or feelings of violence precipitated violence because internal controls break down "once one suspends concern about the irrationality of psychotic symptoms and accepts that they are experienced as real, violence unfolds in a 'rational' fashion'" (p. 143). Link and Stueve (1994) argue that (a) there is a greater likelihood of interpersonal violence when an individual is either fearful of personal harm or feels violence is a threat, and (b) there is a greater likelihood of violence when internal controls of an individual used to block violent behavior are undermined and break down. The psychotic experience becomes to the individual real and rational. "B y rational we do not mean reasonable or justified but rather understandable" (Link & Stueve, 1994, p.143).

Monahan (1997) cites an unpublished study by Swanson, Borum, Swartz, and Monahan (1996), which "replicated Link and Stueve's central finding with data from the [1990] Epidemiological Catchment Area (ECA) study" (Monahan, p. 305) that

respondents who reported threat/control override symptoms were twice as likely as those with other psychotic symptoms to report violence and 6 times as likely

as those with no mental disorder. People with threat/control-override symptoms combined with alcohol or other drug use disorders were 8-10 times more likely to report violence than those without mental disorder. (p. 305)

Critique

Swanson (1994) suggests future epidemiological study designs be "done somewhat differently...[with] more detailed information on specific episodes of violent behavior, independent from psychiatric diagnostic assessments" (p. 133), and that the study be longitudinal and use a life-historical approach. Mulvey (1994) recommends based on "the importance of symptoms" as identified in Link and Stueve (1994) future studies include "psychological belief systems that might easily be confused with mental illness or that might be explored only with those classified as mentally ill. Basic psychological traits, such as impulsivity, and the effects of social networks should also be considered" (p. 667). Further, he suggests (a) types of violence be specified so that a determination can be made as to their likelihood of occurrence in mentally ill subjects irrespective of overall rates of violence in different groups, and (b) examination be made as to whether a subject's social environment or functioning provided protective factors relevant to violence. Link and Stueve (1995) recommend a cohort design which is more specific as to mental disorder(s), uses subjects who have no history of mental disorder(s), and compares subsequent violence by group members. However, they are insufficient in elaborating and nonspecific as to the cohort. Link and Stueve further suggest (a) designing a comprehensive package of background variables which would

"better determine temporal ordering of mental illness and violence, control confounders, assess and weigh the biases associated with each measure, and shed light on the importance of contextual factors," (p. 179), and (b) using multiple ways to operationalize violence such as self and informant reports and official records.

Evaluating The Association Between Mental Illness And Violent/Illegal Behavior Prospectively: An Assessment Of Epidemiological Designs

Link and Stueve (1995) synthesize the evidence linking mental disorder and behavior by reviewing the evidence as presented in epidemiological prospective studies based on five different types of designs, with a critical review of their data sources and conclusions. The synthesis places the four key epidemiological studies identified in the previous overview in historical perspective and context. The first three design types to follow use data based upon arrests or convictions as the measure of violence.

Secondary correlational analyses of arrest-rate data on discharged psychiatric clients.

The first type of design examined post discharge arrest records of patients from public clinics and mental hospitals and the violent behavior/illegal behavior rates they generated. The arrest rates were compared to those in the general population. Rabkin (1979) states in this type of study "two groups are selected, one with a history of psychiatric hospitalization, and one without but otherwise similar, are are followed for equal periods of time to obtain for each group counts of police encounters arrests,

convictions, and incarcerations" (p. 3). Time periods ranged from one year to as long as ten years and population samples from 310 to 100,000 persons. Arrest record compilation differed, with sources not always given. In most instances, data sources were from official arrest records (local or state police or the FBI), but in some situations information came from family members or neighbors through surveys. Further, It should be noted that definitions and classifications of violence differed by locality and jurisdiction. Diagnostic information sources were from state and community mental health hospital and clinic records. Rabkin's review of seven arrest-rate studies between 1965-1979, which recorded arrests for five offenses, all violent crimes against persons (e. g., murder, rape) is cited to indicate "discharged mental patients were arrested more often than the general public...particularly pronounced in the category of felonies ...specifically, of violent crimes or crimes against people" (p. 173). Link and Stueve combined (1995) six recent assessments (Harry & Steadman, 1988; Halcomb & Ahr, 1988; McFarland, Faulkner, Bloom, Hallaux, & Bray 1989; Schuerman & Korbin, 1984; Shore, Filson, & Rae, 1990) with the seven studies assessed by Rabkin and found a median 3:1 patient-to-public arrest ratio when measuring mental health dischargees as against general public arrests.

Critique

Link and Stueve (1995) indicate there are three limitations in arrest-rate studies of discharged patients

1. The "criminalization of mental illness." This objection posits that arrest-rate

differentials suggest more about an association of mental illness to the arrest process than to mental illness and criminal behavior. As an illustration, even when observed committing identical crimes, those who were mentally disordered had a greater likelihood of arrest than those who did not seem to suffer from mental illness (Teplin, 1984,1985). The McFarland et al. 1989 study observes "family members overwhelmingly attributed the arrests to psychiatric crises, and in about half the cases a failed attempt at commitment had preceded the arrest" (p. 718).

2. "Medicalization of deviance" or "psychiatrization of criminal behavior." This objection posits that, due to violent individuals increasingly being placed under psychiatric care, the patient populations' higher levels of arrest rates may be because of their medicalization rather than due to an association of mental illness and violent behavior.

3. Generalizability is limited because patients in the studies come from public mental health hospitals and clinics serving low-income area populations with high rates of violent behavior whether they are or are not mentally ill and where there is an overepresentation of people with mental disorders. An example can be seen in the 1990 study by Shore et al. (1990) in which White House case subjects (192 subjects out of a total 300 civilly committed nonforensic inpatients who were typically delusional schizophrenic and who had been treated at St. Elizabeth's Hospital in Washington, D.C.) were compared with a random matched sample of arrested subjects and with the general population arrest rates. "White House case subjects with prior arrests had a

significantly higher rate of total posthospitalization violent crime arrests than the matched control sample" (p. 746). A case could well be made that the high level of arrest rates in this and similar studies may be heavily influenced by social conditions (Cohen & Cohen, 1984). This suggests it would be beneficial to have an on site follow up assessment of violence by patients discharged from private psychiatric facilities.

Secondary analysis of conviction and mental disorder rates of birth cohorts.

The second type of design takes a birth cohort and prospectively evaluates conviction rates and conviction histories of people with and without mental disorders. Two studies are considered the premiere efforts of this type. Hodgins (1992) compared conviction histories of 15,117 Swedes (7,362 men and 7,039 women). Data sources were (a) criminal records from the Swedish National Police Register, and (b) mental health records from the Stockholm County register. Of these, 82 males and 79 females were classified as having a major mental disorder, 156 males and 98 females as having alcohol and/or drug abuse or dependence, 64 males and 124 females other mental disorders, and 113 males and 79 females as intellectually handicapped. These were compared with subjects (male, 2,209; female, 352) with no mental disorder or intellectual handicap, other mental disorder, major mental disorder or substance abuse. Findings indicated "men treated for major mental disorders (schizophrenia, major affective disorders, paranoid states, and other psychosis) were 2.56 times more likely to have been convicted by age 30 years than were men with no history of psychiatric treatment. The same comparison in women yielded a relative risk of 5.02" (Link &

Stueve, 1995, p. 174). The second study, by Ortmann (only available in Danish and summarized by Hodgins (1992) as a translation), examined 11,540 Danish men and examined data from the central Danish psychiatric register and the central police register, finding "while 34.8% of all the men with no disorder had been registered for at least one offense...43.5% of those admitted with a major disorder, 83.2% of those admitted with substance abuse and/or dependence, and 50.9% of those with other diagnoses had been registered for an offense" (p. 477). Central registers ensured merging of data bases through compilation of all convictions, with hospitalization used as the mental disorder indicator.

Critique

Birth-cohort studies have greater generalizability to broader populations than arrest-rate studies because the samples include subjects irrespective of treatment length or frequency. A criticism of birth-cohort studies is that they do not assess "temporal ordering of the onset of illness and conviction...an important criterion for inferring cause" (Link & Stueve, 1995, p. 174). This suggests that conviction and perhaps incarceration, which could lead to situational mental illness (e. g., anxiety or depressive disorders), might not be captured as a causal connection as part of the assessment process. Limitations to generalizability of the key birth-cohort studies by Hodgins and Ortmann to the United States, despite similarities in criminal justice and mental health systems, are as follows. First, in the United States much higher levels of crime and substance abuse related crime could have a disproportionate statistical

effect by making the small proportion of criminal and violent acts committed by the disordered appear inconsiderable by comparison. Second, these studies employed very broad offence categories, which co-mingle violent crime statistics with theft, traffic crimes (e. g., drunken driving, driving without a license), and other varied, but not violent offense (e.g., perjury, bribery, tax evasion) statistics.

Secondary analysis of self-reported arrest-rate and psychiatric history data based upon a community prevalence study.

The third type of design takes epidemiological data from a sample of community-based residents and evaluates if those who historically have mental illness have a greater likelihood of self-reporting arrests. Only one study in this tradition was reviewed by Link & Stueve (1995), who cite Robins' research in which data from three sites in an epidemiological study were analyzed in 1993 to ascertain whether those with a history of mental illness were more likely than others to be arrested. The results were "consistent with the view that the association between mental disorder and arrest is spurious - entirely attributable to comorbidity between antisocial personality characteristics and/or substance abuse mental disorders" (e. g. dual diagnosis) (Link & Stueve, 1995, p. 174). The study differs from Hodgins and Ortmann's in that the association between violence and mental health was not explicitly tested in that nonviolent and violent offenses are used in the arrest index.

Critique

The criticism of the design is that first, it is not definitively formulated to test the

mental illness and violence relationship, using both nonviolent and violent offenses in a five point scale ranging from none to multiple non-traffic offenses including at least one felony conviction. Second, the causal connection is indeterminate because the "adult antisocial characteristics, substance abuse and other mental illnesses are measured as lifetime occurrences without specifying time ordering" in relation to one another (Link & Stueve, 1995, p. 175). It should be noted that as with first two designs, not all of the studies limited arrest data to violent offences.

Epidemiological studies incorporating self-reported violent behavior using community controls.

A fourth type of design is demonstrated in two epidemiological studies by Swanson et al. (1990) and Link et al. (1992), which expanded the scope of the research beyond the outcomes of arrest/conviction to include self-report of violence that may not have related arrests. The studies confirmed an empirical linkage between mental health and violence and that individuals with serious mental illness are more likely to engage in violent acts than people without psychiatric disorders.

The first study by Swanson et al. (1990), which as noted above, used as a data source the ECA surveys of three sites (Baltimore, MD, Durham, NC, and Los Angeles, CA), found individuals diagnosed with a mental disorder more likely than those without a disorder to engage in self reported violent behaviors. The second study by Link et al. (1992), which used as a data source Dohrenwend et al.'s (1980) study of psychiatric patients and community residents residing in the Washington Heights section of New

York, found

> mental patients have higher rates on all measures of violent/illegal behavior, and these differences cannot be accounted for by sociodemographic and community context variables. A scale of psychotic symptoms is the only variable that accounts for differences in levels of violent/illegal behavior between patients and never-treated community residents. (p. 275)

Critique

According to Link and Stueve (1995), these studies have two weaknesses: (a) lack of clarity of violence and mental illness time ordering due to dependence on retrospective data, and (b) exclusive dependence on self-report data, wherein social desirability may influence the information provided on symptomatology and behavioral violence. However, the criticisms of criminalization of mental illness and psychiatrization of criminal behavior raised in the arrest-rate studies are mitigated in the Swanson et al. and Link et al. studies. The finding that nonarrested clients had high rates of self-reported violence obviates the claim that elevated arrest rates resulted from disproportionate filtering of the mentally ill into the criminal justice system. Additionally, the finding that psychotic symptoms differentiate and explain violence within the community resident population, obviates the supposition that irrespective of psychotic symptoms the violent would be chosen for treatment.

Threat/control override psychiatric symptoms and violence.

A fifth type of design is illustrated by studies utilizing violent act data irrespective

of arrest or conviction. The data sources were from community and patient samples earlier analyzed by Link et al. (1992) consisting of official arrest data, self-reports by patients, four census based community level variables (e. g., socioeconomic status, ethnic heterogeneity, residential mobility, and family disruption), New York City Health Department homicide data, and extensive data on psychiatric symptoms. The studies are "theory-driven," based on the assumption of a causal connection between mental illness and violence which attempts to link psychotic symptoms with violent behaviors. In a threat/control override study, Link and Stueve (as cited in Link & Stueve, 1995) posit "that mental illness is more likely to lead to violence when the associated symptoms cause the perception of threat and/or involve the override of personal controls. People whose psychotic experiences make them feel threatened by others are more likely to behave in a hostile fashion, including a perceived need to engage in preemptive strikes" (p. 176). However, when a patient does not experience a psychotic episode or does not have psychotic symptoms as part of a psychiatric problem, the likelihood of engaging in violent/illegal behavior is identical to that of the average person. Supporting the findings of a link between threat/control override symptoms and violent behavior are studies by Link and Stueve (1994), and two further epidemiological studies by Swanson et al. and Link et al. (as cited by Link and Stueve, 1995; Monahan and Steadman, 1994).

Critique

Link and Stueve (1995) indicate two major concerns about the relationship

between mental illness and violence, which are addressed by the threat/control override symptoms studies: (a) *reverse causation* ("violent behavior - or participation in situations conducive to violent behavior - may be a cause rather than a consequence of mental illness/psychosis," p. 177), and (b) *social desirability* (social bias). If reverse causation were a factor, it would apply with all psychotic symptoms not just the threat/control override symptoms "because there is there is little reason to suspect that violence should cause threat/control override symptoms more than other psychotic symptoms (p. 177). Similarly, in that psychotic symptoms as a whole are undesirable socially, there is no indication that there is a stronger relation between violence and threat/control override symptoms than between violence and any other psychotic symptoms.

Meta-analytic

Two major meta-analytic studies were conducted in the 1990s which reviewed the key violence studies and exemplars: (a) Mossman (1994), and, (b) Bonta, Hanson, and Law (1998). Mossman employed Receiver Operating Characteristics (ROCs) to reanalyze 58 data sets from 44 studies on violence predicting that had been conducted between 1974-1995. Bonta et al. examined longitudinal, prospective recidivism in mentally ill offenders by calculating effect size magnitude for 74 predictors based on 64 unique samples between 1959-1995. Following are a review of the meta-analyses, with a display of subject, data collection, analysis and findings displayed in Table 4.

The Receiver Operating Characteristics (ROC) Meta-Analysis

Widespread measures employed in assessing accuracy of violence predictions encompass sensitivity and specificity, percent correctly classified, positive and negative

predictive power, false-positive and false-negative rates, and relative improvement over chance. These measures are dependent on base rate (the known prevalence of a specific type of violent behavior within a given population over a specific period of time). Comparing the accuracy of predictions across studies has presented a major problem due to considerably divergent base rates of violent recidivism among populations studied. As a countermeasure, Swets (1988, 1992) suggested using Receiver Operating Characteristics (ROC, see Table 5) to project the performance of a diagnostic test or performance. "ROC methods have a major advantage over other measures commonly used to evaluate tools for the prediction of violent and criminal recidivism inasmuch as they remain constant as the base rates and selection rates [proportion of people predicted to be violent] change" (Rice & Harris, 1995, p. 738).

To measure the accuracy of clinicians' predictions about violence, Mossman (1994) conducted a meta-analysis of violence prediction using Receiver Operating Characteristic (ROC) analysis, a system which permits researchers to evaluate accuracy of violence predictions through the use of accuracy indices of performance unaffected by underlying base rates (prevalence) or biases favoring certain prediction outcomes for Type One or Two prediction errors (see Table 4). The ROC curves depict the clinicians' ability to differentiate violent from nonviolent subjects and also allow comparison of different systems or techniques for detecting violent patients. "An ROC curve is simply a plot of the 'hit rate' or the true-positive rate (or sensitivity) as a function of the false-alarm rate (or one minus the specificity) at several cutoff scores"

(Rice & Harris, 1995, p. 738). Mossman (1994) reanalyzed 58 data sets from 44 published studies involving over 16,000 psychiatric patients, indictees, and parolees. He concluded predictions by mental health professionals

> are substantially more accurate than chance. Short-term (1-7 day) clinical predictions seem no more accurate than long-term (1 year) predictions. Past behavior alone appears to be a better long-term predictor of future behavior than clinical judgements and may also be a better indicator than cross-validated actuarial techniques. (p. 783)

Further, Mossman found a limitation lies in

> what ROC analysis quantifies - the trade-off between sensitivity and specificity - is a fundamental feature of their ability to anticipate violence. This means that clinicians (and the general public) should realize that a fraction of the decisions based on assessments of potential violence will inevitably be mistaken. Because clinicians cannot avoid making mistakes, they have to choose what kind of mistakes they prefer to make. (p. 790)

Rice and Harris' (1995) study concluded ROCs have an advantage over other measures used in evaluating violence prediction accuracy (e. g., percent classified, correlation coefficients, relative improvement over chance), noting the ROCs were "simultaneously independent of the base rate for violence in the populations studied and the particular cutoff score chosen to classify cases as likely to be violent" (p. 737). Further, Rice and Harris indicate when the base rates and selection ratios were known or could be accurately estimated, the ROC method could facilitate comparison as to the most effective measure to use (e. g., VRAG and Nuffield's Statistical Information on

Recidivism, the SIR Scale; as cited by Rice and Harris, 1995). They found (a) a "robust" predictive ability for the ROCs "over a broad range of high-risk offenders, over a broad range of violent offenses, and over a broad range of follow up times" (p. 745), and (b) the ROCs assist in determining which instruments to use when there are known base rates and selection ratios. However, Rice and Harris point out limitations of ROC methods. For example, when there is dichotomous prediction, in order to avoid distributions which could deviate grossly from normality, they advise using a clinical prediction device (e. g., clinical judgement/ actuarial scale) allowing for a range of scores. Further, because most violence prediction studies (e. g., the 44 studies examined by Mossman, 1994) only yielded sufficient data to locate at most one point on an ROC, they felt effect size was insufficient to reliably calculate standard error.

The Recidivism In Mentally Ill Offenders Meta-Analysis

Bonta, Hanson, and Law (1998) conducted a meta-analysis with the intent of (a) examining if a difference could be found between recidivism predictors (variables) for the mentally disordered and nondisordered, and (b) "evaluat[ing] the contributions of psychiatry, clinical psychology, and general offender research to the prediction of criminal behavior among mentally disordered offenders" (p. 124). They culled a total of 74 predictors from 64 unique samples and grouped them by the domains of: (a) *personal demographics* (e. g., age, socioeconomic status, race), (b) *criminal history* (e. g., number of prior convictions, age of involvement in crime), (c) *deviant lifestyle-history* (e. g., learning to function, such as employment stability and avoidance of substance abuse; education, such as grade level, maladjustment at school), and (d) *clinical* (e. g., diagnosis, intellectual dysfunction). Meta-analysis was used to arrive at "a common

statistic...referred to as *effect size*....an estimate of the magnitude of the relationship between two variables...to compare the results across studies" (p. 124). Two definitions for violence were used.

1. A broad definition of violence that includes not only the obvious physical injury offenses but also measures of offence seriousness, use of a weapon, homicide, and threats of violence.
2. The second definition of a *violent index offence* is limited to physical injury offenses (p. 125).

Two levels of dependent variables were assessed (a) officially documented *general recidivism* (arrests, convictions, unlawful behavior resulting in psychiatric hospital recommitment), and (b) *violent recidivism* (a new criminal offense which is violent). Concurrently evaluated and broken down were the variables' conceptual and theoretical model sources: (a) psychopathological (e. g., psychotic symptomatology such as hallucinations, personal distress indicators such as depression), and (b) rational offender models, further broken down into sociological criminology (e. g., social hierarchy, race) and social psychological (e. g., criminal companions).

Bonta et al. (1998) found "the major predictors of general and violent recidivism [objective risk assessment, adult criminal history, juvenile delinquency] appear comparable for mentally disordered and nondisordered offenders" (p. 139). Criminal history predictors of future violent-serious crime (e. g., prior convictions, age of criminal involvement) were the best predictors of general and violent recidivism. Minority race and violent recidivism were found to be significantly correlated. Clinical variables showed the lowest effect size, with the exception of (a) antisocial personality disorder

"a significantly better predictor than any other clinical disorder, such as schizophrenia, manic depression, and paranoia," (p. 128), and (b) a history of psychiatric admissions.

In summary, Bonta et al. found under the four predictor domains

1. The best predictors of violent recidivism under *personal demographics*, with a mean effect size of .12, were: age (younger), race (minority), and marital status (single).

2. "All criminal history and offense variables, except for a violent or sexual index offense and use of a weapon" (p. 128), were predictive of violent behavior under the *criminal history domain*, with a mean effect size of .15. The variables included: adult criminal history (e. g., prior convictions), nonviolent criminal history, violent history, juvenile delinquency, and institutional adjustment measured by *onset* and *frequency* of criminal behavior..

3. The best predictors of violent recidivism under *deviant lifestyle,* with a mean effect size of .08, were: family dysfunction, poor work adjustment, and substance abuse.

4. The best predictors of violent recidivism under *the clinical* domain, with a mean effect size of -.03, were: antisocial personality disorder, history of admissions, and objective risk assessment (i. e., included traditional offender risk scales and measures derived from purely statistical procedures" (p. 134)).

Objective risk measures (mean effect size = .27) were significantly better than clinical judgement measures (mean effect size = .09), though both positively predicted

general recidivism.

Bonta et al. (1998) conclude that as their study has identified and distinguished which "predictors of criminal behavior" are most and least important, this will assist clinicians and researchers in developing valid actuarial risk scales. Further, that it is necessary "to adopt a more general theoretical perspective derived from research on general offenders. Models of psychopathology may have taken us as far as they can, and it is time to expand our approach to understand the mentally disordered offender" (p. 139).

Critique of Methodology: Summary

There is at present no standardized, universally accepted methodology for conducting violence prediction research. The broad range of approaches (actuarial, clinical, and epidemiological) indicate that Meehl's (1957,1986) issue of the "head" versus the "formula" remains unresolved. To date, irrespective of approach, accuracy of violence predictions is seen by most researchers as at worst being in error in two out of three instances (first generation), as accurate half the time (second generation), or at best at better than chance (new generation). Further, the issue of whether clinicians are more accurate in their predictions than lay persons (Litwack, 1994) requires investigation.

Problematic to to the methodology employed in studies are:

1. Differing operational definitions of violence are used in studies (Bonta et al., 1998; Brizer, 1989; Chaiken et al., 1994; Fraser, 1995; Litwack, 1994; Megargee,

1976; Mercy et al., 1993; Monahan, 1981, 1984; Newhill, 1992).

2. Arrest data are not limited to violent offenders. This deficiency can be seen in the comparative studies by Rabkin (1979) and Link and Stueve (1995), and in Hodgins' (1992) birth-cohort study. This severely limits the ability to compare studies and the generalizability of the findings.

3. A theoretical base needs to be developed to link mental health and violence. At present there is no underlying, unifying theory.

4. Arrest records are used as the primary source of data to determine violent outcomes in many studies, with the possibility existing that much behavior by those predicted to be violent goes undetected, including the nature of the violence and its relationship to mental illness (e. g., what is the individual's intent in taking the action: Induced by psychosis, deliberate action, or a call for assistance). Further, not all arrests involve violence and not all studies differentiate arrests based on violent and non-violent offenses.

5. There are wide variances in the predictive studies' outcomes, with findings registering high hits ranging from true positives to false positives to false negatives. This raises a number of issues relating to accuracy, what is actually being measured, and implications for practitioners. There needs to be clarity as to what is actually being measured in order to evaluate the success of a prediction scheme. Is it differentiation between true positives and false positives, and/or improvement over the base rates? Further, the social implications of hitting high numbers of false positives and false

negatives in predictions relating to criminality and/or civil commitment cases always need interpretation, for they mean in the former holding inappropriately people in detention or crisis units, and in the latter sending into the community those who have committed crimes or violent acts who should have been held.

6. Consistent with Bonta et al.'s (1998) meta-analytic finding that "clinical or psychopathological variables were either unrelated to recidivism or negatively related" (p. 139), greater attention needs to be paid to using alternative variables identified in the social psychological criminological literature. Bonta et al. also point out the unresolved problems existing (as indicated above in summary points one and four) in doing comparative studies due to (a) definitional "disagreement over what constitutes a violent crime" (p. 125) and, (b) whether "a serious crime, in itself, may not necessarily predict violence" (p. 125) when arrest records are used as the primary source of data. This is exemplified by the fact that whereas most studies linking mental illness to violence usually measured violent behavior, Bonta et al., Teplin (1994), and Harris et al. (1993) focused on arrests/recidivism, where violent acts leading to arrest may be equally likely among mentally ill offenders and everyday criminals.

7. Contingent upon how one defines violence, the mental illness connection varies. The studies reflect three broad approaches to the dependent variable and whether there is a mental illness connection as a correlate predictor: (a) "violence" defined as *arrest for either violent crime or for any crime*, with most studies finding *yes, mental illness is predictive*, and a few studies *no*; (b) "violence" defined as *objective*

behavior (self or other reported) either *in institutions* or *in the community*, with studies mostly finding *yes*, *mental illness is predictive*, but *no* in a few cases; and, (c) "violence" defined as *risk assessment and measurement of potential violence*, with *affirmative* findings in most studies, but *no* in a few cases. The disparity in the state-of-the-art in violence prediction is reflective of both (a) lack of a unifying theory, and (b) lack of the concomitant development of standardized instrumentation. As Borum (1996) cites Webster, Eaves, Douglas, and Wintrup "'the great challenge in what remains of the 1990s is to integrate the almost separate worlds of research on the prediction of violence and the clinical practice of assessment. At present the two domains scarcely intersect'" (p. 947).

If the past is a reliable indicator of the future, social work practice in the area of violence prediction will be a mix of clinical judgement and actuarial methods. The head and the formula will blend into a continuum of prediction, with each approach providing a check and balance upon the other.

Table 1 Exemplars and Key Studies

Actuarial					
Author(s) Year	*Design/Data Collection*	*Subjects/ Sampling*	*Data Collection Tool/ Instruments*	*Analysis*	*Central Findings*
Binder & McNiel (1988) ***Study addresses whether schizophrenic patients, manic patients, or patients with other diagnoses most likely to be assaultive before admission or during acute phase of hospitalization***	Data source: medical record review by six clinical staff members of each patient for diagnosis and demographic information and extensive chart review for evidence of violence before admission (2 weeks) and during acute hospitalization (first 24 hours).	Setting: locked, short-term, inpatient psychiatric unit in a university hospital. Subjects were 150 patients randomly selected from all admissions admitted during 1983 (N=238) and all of the patients admitted during first six months of 1984 (N=118). After Multiple admissions were removed, the population size was 253.	Diagnosis based on ICD-9, Clinical Modification International Classification of Diseases); social class computed on Hollingshead's Two-Factor Index of Social Position; violent behavior rated according to adaptation of Lagos Scale; revised scale used four categories of violent behavior: attacks on persons, attacks on objects, threats to attack persons, verbal attacks on persons	Actuarial rating scale measured interaction between nature of patients' underlying psychopathology (i.e., diagnosis), context (i.e., community versus hospital) and violent behavior. Independent variables: diagnosis, context. Dependent variable: dangerousness. Statistical procedure: Chi- square analyses.	Risk of violence among diagnostic groups varies according to context moderated by situational variables. Schizophrenics and manic patients more likely to be assaultive before admission. In hospital, manics most likely to be assaultive.

Actuarial					
Author(s) Year	*Design/Data Collection*	*Subjects/ Sampling*	*Data Collection Tool/ Instruments*	*Analysis*	*Central Findings*
McNiel, Binder, & Greenfield (1988). *Study* ***investigates the relationship between community violence and violence in hospital for patients with*** *civil emergency commitments.*	Medical record review by six clinicians for evidence of violent behavior in two time periods: 2 weeks preceding admission and first 3 days after beginning of 72 hour emergency commitment period.	238 unduplicated patients involuntarily admitted to a university-based acute inpatient unit, 2 weeks before commitment and first 72 hours of hospitalization. All admissions of first 6 months of 1984 (N=118) and 150 selected randomly from 1983 admissions with duplicative patients deleted. Heterogeneous group.	Violent behavior rated by Lagos Scale, and demographic information, legal status, suicidal behavior by Hargreaves, LeGoullen, & Gaynor Scale (unpublished).	Relationship between community violence and violence in hospital for patients hospitalized through emergency civil commitment. Comparison of clinical & statistical predictions. Measured 9 background variables (e.g. sex, marital status, ethnic group, age, residence, diagnosis suicidal behavior, substance abuse) to violence in community & hospital. Statistical procedures: discriminant function analysis, cross-validation analysis, logit analysis	Patients who were violent in the community were more likely to be violent in the hospital. Statistical model better in classifying specific patients as to whether they would attack or not; clinical identified more patients who actually attacked others. Non-Suicidal more likely than suicidal to be violent. Married/living together overrepresented in physically assaultive group.

Actuarial					
Author(s) Year	*Design/Data Collection*	*Subjects/ Sampling*	*Data Collection Tool/ Instruments*	*Analysis*	*Central Findings*
Klassen & O'Connor (1988) ***Short term predictive study incorporating correlates of violence.***	Those believed at risk for violent behavior were Interviewed during hospitalization. These self-report data supplemented by chart data from treatment facility and criminal records. Data collected at admission used to predict subsequent violent acts (arrests for a violent crime) or readmission for violence. Criterion measures of subsequent violence were arrests for violent crimes *or* readmission for violence.	239 of a study sample of 304 adult males admitted as inpatients to an urban community mental health center (who had not been institutionalized or had not moved out of the greater metropolitan area) were followed for up to six months post release. Only males potentially at risk for violent behavior selected for study. Criteria for violence potential included one or more of following: thoughts or fears of harming others, command hallucinations to harm others, threats to harm others, attempted or actual assault, rape robbery, or arson.	Self report data. Developed interview instrument. Megargee's classification of offenses as violent, abstract reasoning scale of Shipley-Institute of Living Scale, which measures verbal and abstract scores.	A systematic effort to incorporate known correlates of violence and apply them to a short -term predictive study. Twenty-two variables grouped by arrest record, mental health center record, demo data (never married, age), family background. Previous violence, test scores on abstract reasoning, situational (e. g., satisfaction with home life, live with parents) measures in past three months predicted against dichotomous measures of nonviolent/violent. Statistical Procedure: stepwise discriminant analysis conducted using 67 potential predictor variables with violent or non violent group membership as criterion measure. Of these, 22 variables were included in the predictive equation.	Of those predicted to be nonviolent, 94% (193) were actually nonviolent. Of those predicted to be violent, 59% were actually violent. 76% of the violent subjects were identified.

Actuarial					
Author(s) Year	*Design/Data Collection*	*Subjects/ Sampling*	*Data Collection Tool/ Instruments*	*Analysis*	*Central Findings*
McNiel & Binder (1989) ***Study evaluates association between preadmission threats and subsequent violence.***	Medical records reviewed for evidence patients had threatened to attack other patient in two weeks preceding admission and violent behavior during first three days of hospitalization. Data on violent behavior in hospital collected from progress notes and routine forms used by ward staff to record such incidents.	253 unduplicated patients in acute psychiatric inpatient unit, two weeks before admission and first 3 days of hospitalization. Admissions of first six months of 1984, + 150 randomly selected 1983 admissions, with duplicated patients admitted. Same data as Binder & McNiel 1988 study.	Medical records, data on violent behavior from hospital progress notes, checklist for violence incidents, ICD, Clinical Modification.	Whether patients who threaten others in the community are more likely to engage in violent behavior during acute hospitalization than patients who have not threatened others. Variables measured patients (all, schizophrenic, manic, other) against assault related event. Statistical procedure: Chi sq.	58% of patients who had made threats before admission required seclusion for dangerous behavior, 32% patients who had made threats physically assaulted someone in the hospital
Klassen & O'Connor (1989) ***Short term predictive study using correlates of violence.***	Cross-Validation study. Interviews. Data collected at admission used to predict subsequent violent acts or readmissions during a 1 year follow up. Arrest records, mental health center records.	Calibration sample of adult males (N=251) admitted as inpatients to a community mental health center from Feb. through mid March '84 and a cross-validation sample (N=333) from March to August '86 followed for 12 months after release.	Interview instrument and statistical scale developed based on 13 predictor variables (e.g., early family history, self-reported arrests) against predicted nonviolent/violent Life Experiences Survey to measure life changes, Shipley-Institute of Living Scale to measure verbal and abstract scores.	Correlation results between predictor variables and violence in two samples included demos, family background, criminal justice, mental health contacts, past violent behavior, current situational measures. Statistical procedure: stepwise discriminant analysis.	Correlation between the score and subsequent violence .32, with 75.8% correctly classified, & false positive rate 47.6%

Actuarial					
Author(s) Year	*Design/Data Collection*	*Subjects/ Sampling*	*Data Collection Tool/ Instruments*	*Analysis*	*Central Findings*
Harris, Rice & Quinsey (1993) ***Study used to develop an actuarial instrument for violence prediction of violent post release offenses by mentally disordered offenders.***	Cross-validation, group study. Actuarial instrument empirically derived by using information gathered from comprehensive record reviews. Recidivism outcome data from: coroner's office, Lt. Gov.'s Board of Review, Royal Canadian Mounted Police, National Parole Service of Canada, and provisional correctional and parole systems. Other data (e. g., DSM-III criteria, Psychopathy Checklist) from institutional files.	618 men who had been admitted to a maximum security mental health center, of which 332 were admitted for treatment, and 286 admitted only for a brief psychiatric assessment. By design, each man in second group matched to a man in the first by: same criminal charge, same scores measuring frequency/severity of violent/non violent criminal activity (within 20%), same age (within 1 year), offenses occurred within one year of each other. Average time at risk 7 years (81.5 months). Time at risk defined as when a subject had opportunity to recidivate when released to street or placed in halfway house or open psychiatric ward.	Revised Psychopathy Checklist, Statistical Risk Appraisal Guide (later known as Violence Risk Appraisal Guide, VRAG). Andrew's Level of Supervision Inventory. Akman and Normandeau's seriousness scale. Socio-economic status according to Bishen Scale. DSM- III diagnosis of childhood behavior problems.	Outcome variable (prospective) was violent recidivism: any new charge for a criminal offense against persons or returned to maximum security institution for violent behavior against persons that would have resulted in a criminal charge for an offence against persons. 12 identified study variables (retrospective) were used in the instrument (e. g., PCL-R score, DSM-III diagnosis of schizophrenia, diagnosis of personality disorder, criminal history for property offenses) to (a) construct a predictive equation, and (b) assign a unitary weight to each variable in terms of the correlation between total score and violent recidivism Accomplished by standardizing each variable, correlating sum of variables with violent recidivism). Statistical procedure: multiple regression & logistic regression analyses.	Correlation between scores on VRAG and violent recidivism .44, classification accuracy 74%, sensitivity .40 and specificity .88.

Actuarial					
Author(s) Year	*Design/Data Collection*	*Subjects/ Sampling*	*Data Collection Tool/ Instruments*	*Analysis*	*Central Findings*
McNiel & Binder (1994) ***Study validates a screening checklist for assessing risk of violence by identifying patients who later displayed aggressive behavior in the hospital.***	Retrospective chart review to gather data concerning preadmission violent behavior, demographic, and clinical variables. Violence during hospitalization measured by use of behavioral checklist.	The study was conducted on a new sample of 338 patients admitted to a university-based locked short-term psychiatric inpatient unit over a 20 month period (validation sample). (The McNiel, Binder, & Greenfield 1988 study of 238 civilly committed patients was used as a calibration sample.)	Adaptation of Lagos, Perlmuter, Saexinger system (which codes preadmission violence), Overt Aggression Scale, chart reviews, Mossman & Somoza framework for predicting outcomes (ROC), and a brief screening checklist for assessing the risk of violence.	Comparison of risk of violence as estimated by screening checklist with later occurrence of behavior by two samples: calibrated & validation. Five predictor variables: 1.history of physical attacks and/or fear inducing behavior. 2.absence of suicidal behavior. 3.schizophrenic or manic diagnosis 4.male gender 5.married or living together. Statistical procedure: chi-square.	Results suggest value of actuarial methods due to identification of patients who later exhibited aggressive behavior in hospital; positive predictive value 59%, negative, 70.6%, sensitivity 57.2%, specificity 70%, total predictive value 65.4%.
Quinsey, Rice & Harris (1995) ***Study predicts sexual recidivism among sex offenders by reanalyzing follow-up data of rapists and child molesters.***	Actuarial approach used for reanalysis of follow-up data of rapists and child molesters. Data obtained from files: institutional police, parole services.	178 sex offenders at maximum security psychiatric facility followed for 59 months of opportunity to reoffend. 20 subjects randomly chosen and independently coded for interrater reliability	Hare's Psychopathy Checklist (PCL-R), Quinsey & Chaplin's 7-point predictor scale, Recidivism Prediction Instrument (later called VRAG) modified from Nuffield's Recidivism Prediction Scale, Phallometric indexes of deviant sexual interests.	Sexual recidivism predicted by previous criminal history, psychopathy ratings, & phallometric assessment. Clinical judgement anchored through actuarial estimate of risk, than altered by examining dynamic variables such as treatment outcome, treatment intensity, supervision quality. Statistical procedure: stepwise regression analysis.	A linear relationship (r=.45) was found between scores on the predictor scale and reconviction for a sexual offence.

Actuarial					
Author(s) Year	*Design/Data Collection*	*Subjects/ Sampling*	*Data Collection Tool/ Instruments*	*Analysis*	*Central Findings*
Villeneuve & Quinsey (1995) ***Study examines if a negative relationship exists between psychosis and violent recidivism in a sample of former inpatients of a behavioral/ psychiatric treatment center***	Actuarial instruments used to predict long-term risk of violent recidivism. File search of psychiatric files, parole board files, and criminal history files.	120 male inmates released from a maximum-security inpatient psychiatric unit to at risk situation (e. g., community, halfway house) and followed for average of 92 months. Sample selected by file search using numerical order of resident, in Regional Treatment Centre psychiatric files (N=120), the National Parole Board files, Royal Canadian Mounted Police criminal files. Final sample represented 62% of the first 194 potential participants identified	Nuffield's Recidivism Prediction Scale method (RPS) and also the Violence Recidivism Scale (VRISK) which was developed from it.	Predictors of violent recidivism used: juvenile delinquency, younger age of release, drugs involved in offence, violent convictions, separation from parents before age 16, alcohol involved in offenses, criminal versatility, short periods of employment, no psychotic illness. Statistical procedure: discriminant function analysis	VRISK actuarial instrument correlated .43 with violent recidivism, resulting in 32% relative improvement over chance (base rate). Psychosis had small but consistent negative relationship to probability of rearrest for violent offense.

Actuarial					
Author(s) Year	*Design/Data Collection*	*Subjects/ Sampling*	*Data Collection Tool/ Instruments*	*Analysis*	*Central Findings*
Steadman, Mulvey, Monahan, Robbins, Appelbaum, Grisso, Roth, & Silver (1988 - ongoing) Cutting edge study. Final phase, 1996-1999, of MacArthur study data in process. Analysis, interpretation, and early conclusions commencing to be published.	Evaluation outcome, group study with two components: 1. MacArthur Violence Risk Assessment Study, 2. MacArthur Community Violence Risk Study. Longitudinal patient and community studies, interviews, self-report. diagnostic assessment, patient's records, medical record information.	1. 3 acute inpatient sites with 1,136 patients, 2. a comparison group living in the neighborhoods in which the patients resided after hospital discharge consisting of 519 adults from one of the three sites (Pittsburgh). Stratified sampling.	Hare's Psychopathy Checklist (PCL), Barrat Impulsiveness Scale (BIS), Maudsley Assessment of Delusions Schedule (MADS), Novaco Anger Scale (NAS), DSM-III-R Checklist, Brief Psychiatric Rating Scale (BPRS), Global Assessment Functioning Scale (GAF), Community Violence Instrument, Wais-IQ, NEO Personality Inventory, and the Michigan Alcoholism Screening Test (MAST), and the Drug Abuse Screening Test (DAST) to the comparison sample and to the patients at each followup.	Risk factors in four domains are being used: dispositional factors (e.g., demographic, personality, cognitive); historical (e. g., social history, mental hospitalization history, history of crime and violence); contextual factors (e. g., perceived stress, social support, means for violence); clinical factors (e. g., axis 1 diagnosis, symptoms, axis 11 diagnosis, functioning, substance abuse); log linear analysis, Kruskal-Wallis 1-way analysis of variance (ANOVA), hierarchial logistic regression,	The project is in the process of analyzing, interpreting, and releasing data from both studies. Initial findings: Patient and community comparison groups' violence most often at home and target family members and friends; for both groups substance abuse symptoms significantly raised rate of violence; decline of proportion of subjects engaging in violence over time ; highest rate of violence during 10 weeks prior to hospitalization during which patients enrolled in study.

Table 2 Exemplars and Key Studies

Clinical					
Author(s) Year	*Design/Data Collection*	*Subjects/ Sampling*	*Data Collection Tool/ Instruments*	*Analysis*	*Central Findings*
Werner, Rose, & Yesavage (1983) ***Study examines accuracy rate of clinical predictions of imminent dangerousness.***	Evaluation, review of summary descriptions, charts, case materials. Clinical judges were asked to use 19 variables (18 based upon the BPRS scale which a psychiatrist and a trained research assistant used to evaluate 40 male patients upon admission, and a 19th variable as to whether commission of a violent act had been a factor leading to hospitalization). as cues to forecast whether each patient would or would not engage in a violent or assaultive act during first 7 days following admission.	Predictions of patients' imminent dangerousness by 30 clinical judges (15 psychologists/ 15 psychiatrists) of 40 male patients newly admitted to an acute -care psychiatric unit for first 7 days. Judges reviewed summary descriptions of patients and made predictions based on 19 variables as cues. Sample selected from a large (N=100) group that had agreed to participate. All patients who had no missing data and violent on unit included behavior in sample; eligible subjects not violent on unit randomly selected to bring N to 40. combined with violent patients who had no missing data and random sampling of non violent patients.	Brief Psychiatric Rating Scale (BPRS), Index of response validity, Index of corrected hit rate.	19 Independent cue variables (e. g., anxiety, tension, assault led to admission) correlated to dependent variables of individual and composite accuracy of predictions by psychologist/ psychiatrists of imminent violence (acts in which the patient struck or otherwise physically attacked another person). Statistical procedures: Lens model (cue-utilization or multiple-cue probability approach) used to analyze judgements of dangerousness.	On whole, both actual violence and judges' forecasts were linearly predictable with cue variables of overt hostility, paranoid, tense, nondepressed and assaultive prior to admission. Statistically significant levels of agreement found among judges' predictions. Composite level of accuracy not high (Composite judge - .24). Composite accuracy refers to computing predictions for each professional group and for the total set of judges by pooling their predictions about patients (e. g., the percentage of judges for each of the 40 cases who rated the patient as violent).

Clinical					
Author(s) Year	*Design/Data Collection*	*Subjects/ Sampling*	*Data Collection Tool/ Instruments*	*Analysis*	*Central Findings*
Werner, Rose, Yesavage, & Seeman (1984) ***Study examines psychiatrists forecasts of violence***	Data on the basis of which predictions of violence were made consisted of: admission ratings by a psychiatrist and trained assistant and whether physically assaultive act had been a factor in hospitalization. Case materials, unobtrusive. Process the same as in Werner, Rose, & Yesavage 1983.	15 psychiatrists' judgments of dangerousness on 40 male patients on psychiatric intensive care unit; psychiatrists asked to predict if assault would occur within first 7 days following admission.	BPRS. Indexes of predictive validity and corrected hit rate.	Correlations were computed between patients' status on each of the 19 independent admission variables (e.g., anxiety, tension, assault led to admission) and composite predictions of violence (e. g., correlation of 19 admission variables with judgment/ assault). Statistical procedure: multiple regression, statistical analysis of summaries of predictions. Clinical judgement task was prediction of assault by patients on an acute unit. Dependent variables were judgement, whether patient would commit assaultive act within 7 days (response validity).	Correlation between actual violence and psychiatrists' predictions of violence .14. Clinical picture of hostility and agitation, accompanied by paranoid ideation and previous assaultiveness viewed as indicating potential for violence on acute inpatient unit. Analyses suggest small correlation between actual violence and psychiatrists' predictions may be result of emphasis on cues other than those in fact most predictive of violence such as emotional withdrawal and hallucinatory behavior.

Clinical					
Author(s) Year	*Design/Data Collection*	*Subjects/ Sampling*	*Data Collection Tool/ Instruments*	*Analysis*	*Central Findings*
Segal, Watson, Goldfinger, & Averbuck (1988a) *Part I of study of clinicians' assessment of dangerousness. In psychiatric emergency room.* *Key Question: The extent to which clinicians employ a shared professional standard in evaluating a patients' dangerousness.*	Observers (clinical social workers with experience in assessing severely disturbed adults) in a psychiatric emergency room accompanied assessing clinician and patient and coded case on TRIAD. Clinician (psychiatrists, psychiatric technicians, nurses, social workers, other professionals, paraprofessionals, or unlicensed professionals in training) completed CGR. Review of charts.	Disposition decisions by 70 clinicians at five psychiatric emergency rooms of over 251 cases. No formal sampling procedures.	Clinician's Global Ratings (CGR) of dangerousness, Three Ratings of Involuntary Admissibility (TRIAD).	Independent variables of TRIAD (clinical interpretation and application of criteria "danger to self," "danger to others," and "grave disability" to mental illness), and CGR severity scores (independent rating by physician immediately after making a disposition decision on a case) measured against dependent variables of disposition released and retained. Statistical procedure: multiple regression.	TRIAD scores correlated highly with overall clinical ratings of dangerousness. Dangerousness criteria can be reliably described in behavioral terms in several settings. Accuracy of TRIAD predictions of disposition: in rural facilities: 72%, in suburban county hospital 89%. Distribution of TRIAD severity scores closely parallels CGR severity scores. Clinicians apply shared concept of dangerousness that can be behaviorally described.

Clinical					
Author(s) Year	*Design/Data Collection*	*Subjects/ Sampling*	*Data Collection Tool/ Instruments*	*Analysis*	*Central Findings*
Segal, Watson, Goldfinger, & Averbuck (1988b) ***Part II of study of emergency room clinicians' assessment of mental disorder indicators.*** ***Key Questions:*** *Relationship between mental disorder and perceived dangerousness in patients evaluated for hospital admission & the effect of this relationship on admission decisions and the character of the acute-care population.*	Observers (clinical social workers with experience in assessing severely disturbed adults) in a psychiatric emergency room accompanied assessing clinician and patient and coded case on TRIAD. Clinician (psychiatrists, psychiatric technicians, nurses, social workers, other professionals, paraprofessionals, or unlicensed professionals in training) completed CGR. Review of charts.	70 clinicians evaluated 198 psychiatric emergency patients in five facilities. No formal sampling procedures.	TRIAD, CGR, Indicators of Mental Disorders Scale (IMDS, which measures discrete manifestations of mental disorders), DSM- III diagnosis.	Diagnostic categories of symptoms, impaired judgement and behavior, and Impulsivity Independent variables measured against dependent variables of TRIAD (index simulating clinical judgment scored by observer/researcher) and CGR (clinician rating made on form immediately after making disposition) severity scores. Statistical procedure: Pearson coefficient, correlation coefficients.	Overall perceived dangerousness scores on both TRIAD and CGR positively related to all symptom types of the emergency room population (e.g., Impulsivity, judgment/ thought content/thought form/behavior/ perception/memory/ orientation disorders, irritability, inappropriate affect, expansiveness), except depression and anxiety. Phenomena to which clinicians respond in estimating dangerousness covary with symptoms and diagnosis in that those most severely ill among psychiatric emergency room patients are also those perceived as most closely fitting dangerousness criteria for commitment.

Clinical					
Author(s) Year	*Design/Data Collection*	*Subjects/ Sampling*	*Data Collection Tool/ Instruments*	*Analysis*	*Central Findings*
Lidz, Mulvey, Appelbaum, & Cleveland (1989) ***Study examines consistency of clinicians between ratings of committability and dangerousness.***	Interviews between clinicians and patients, verbatim transcripts of interactions, medical records and case summaries, coding of observers' notes.	96 clinicians evaluated 411 patients in emergency room of large urban hospital.	Independent ratings, 7 point Likert type scales, to measure 12 dimensions (e.g., dangerousness to others, suicidality).	Examined reliability and validity of legal criteria for commitment through quantitative & qualitative analysis to measure agreement between raters and congruence between commitment standards and ratings of committability. Statistical procedure: quantitative & qualitative analysis, interclass reliability coefficients (ICC). 2 by 2 by 2 logistic analysis.	A strong relationship between ratings of committability and ratings of dangerousness suggests that clinicians were conforming to the logic of the commitment law. Fair application of commitment standards. Concerns 1. clinicians perception they are not to dispute other facilities emergency commitments, 2. disagreement as to whether to commit for other than treatment purposes.

Clinical					
Author(s) Year	*Design/Data Collection*	*Subjects/ Sampling*	*Data Collection Tool/ Instruments*	*Analysis*	*Central Findings*
Cooper & Werner (1990) ***Study examines predicting violence in newly admitted inmates.***	Bureau Of Prison (BOP) files, inmate data forms, questionnaires. BOP invited psychologists and case managers on the staffs of Federal Correctional Institutions (FCIs) to forecast violence at a medium-security federal correctional institution in Englewood, Colorado.	10 psychologists & 11 case managers forecast violence during first 6 months of incarceration of two groups of 33 male inmates at a medium-security federal correctional institution. One group included all committed inmates demonstrating violent adjustment during first six months in prison; second group random who had not demonstrated violence.	Dichotomous classification scheme (violent vs. not violent, coded 1 and 0 respectively), Lens Model to examine individual and composite decision-making strategies reflecting linear association between cues and predictions. Two measures of judgement accuracy used: 1. Response validity, 2. Hit and false alarm rates.	17 independent cue variables describing criminal/demographic background (e. g., current offense, sentence length, history of violence, number of prior arrests) measured against dependent variables of predicted and actual violence (actual occurrence/no actual occurrence). Statistical procedure: empirical linear regression model, ICC (interclass correlations), stepwise multiple regression.	Judges rendered forecasts and confidence levels for all inmates. Low levels of reliability were found among individual judges' forecasts, but high agreement for their composite judgments. This result replicates finding that reliability in forecasting violence can be enhanced by pooling judges' predictions (Werner et al., 1983).
Gondolf, Mulvey, & Lidz (1990) ***Study examines prevalence of family violence by individuals in psychiatric emergency room and temporality of incident (recent, within 3 months of visiting emergency room; or past, more than 3 months ago).***	Evaluation interviews. Data included transcript of interview, observations concerning interview, demographic material from hospital forms, histories drawn from hospital records.	389 persons visiting emergency room of a 120 bed psychiatric training and research hospital over a six month period. Data collected on 60 percent of cases seen in emergency room.	Adaptation of the Conflict Tactic Scale physical abuse categories	Independent variables physical abuse (e. g., pushing, physical fights, sexual attack) measured against dependent variables of target(s) of assaults: family, nonfamily, both, and correlated to demographic characteristics. Statistical procedure: Chi sq.	Demographic and behavioral differences between subjects involved in family and non family violence. Those involved in both kinds of assault more frequently violent. Family violent likely to be employed, less likely to report suicide/alcohol abuse.

Clinical					
Author(s) Year	*Design/Data Collection*	*Subjects/ Sampling*	*Data Collection Tool/ Instruments*	*Analysis*	*Central Findings*
Apperson, Mulvey, & Lidz (1993) ***Study explores different measures and sampling*** *strategies on* ***short-term*** *clinical* ***predictions of*** *violence.*	Clinical interviews, text of unit meetings and data from chart reviews used to determine occurrence and dates of violent acts, seclusions for violent acts or threats, and violent threats, record reviews, telephone calls, medical charts, summed rating scale.	Two index and two corresponding comparison groups drawn from 178 unduplicated psychiatric inpatient admissions to a 120-bed urban hospital serving as short-term treatment facility for large, urban community mental health catchment area.	12 item rating scale, ratings by intake clinicians.	Independent variables based on eight areas (e. g., background, age, race, most serious violent behavior) measured against dependent variables of Rating of Potential Assaultiveness on Inpatient Unit (potentially, not potentially assaultive) and Grounds for Involuntary Commitment (danger to others, other grounds). Statistical procedure: hierarchical log linear analysis of frequencies	Significant difference in rate of inpatient violence between subjects rated as potentially assaultive (75.0%) and patients rated as not potentially assaultive (12.5%), but rate difference not significant between patients who were (56.0%) and were not (42.0%) involuntarily committed as dangerous to others.

Clinical					
Author(s) Year	*Design/Data Collection*	*Subjects/ Sampling*	*Data Collection Tool/ Instruments*	*Analysis*	*Central Findings*
Lidz, Mulvey, Gardner (1993) *Study examines accuracy of clinicians in predicting violence in mental patients.*	Interviews, patient self reports, collateral reporting, official records. Six month follow up.	148 different clinicians (nurses-clinicians or junior residents) and 67 different psychiatrists (attending) rated a total sample of 714 (matched samples of 357 each) psychiatric patients(48% African Americans, 60% men, mean age 28) they examined in the psychiatric emergency room of a large university based hospital with responsibility for an urban catchment area and assessed for potential violence to others for six months in community. Grouping variable distinction: each predicted patient was matched with a patient that received no concern about violence from staff members .	Informal summed rating scales from clinicians and psychiatrists, generating a score between 0 and 10 to assess potential patient violence toward others during the next 6 months. McNemar's test measuring accuracy within each group.	Diagnostic symptoms (schizophrenia, affective disorder, substance abuse, personality disorder, other), were measured against the predicted and the comparison groups. Also measured was the seriousness of patient violence against the seriousness of the predicted patient violence. Statistical procedure: McNemar's test.	Violence during the follow up period reported in 45% of cases: 36% in comparison group and 53% in cases predicted to be violent. Overall accuracy significantly better than chance, except for women, for whom sensitivity was 54% and specificity 53%, values not significantly different from 50%. For men, accuracy for predicting violence was 63% for sensitivity and 60% for specificity.

Table 3 Exemplars and Key Studies

Epidemiological					
Authors(s) Dates	*Design/Data Collection*	*Subjects/ Sampling*	*Data Collection Tool/ Instruments*	*Analysis*	*Central Findings*
Teplin (1990) ***Study compares prevalence of severe mental disorder among urban jail detainees and Epidemiological Catchment Area sample.***	Prevalence study. Jail interviews conducted by clinical psychologists. NIMH baseline data by using NIMH-DIS to calculate prevalence of mental disorder in five cities.	Stratified random sample of male jail detainees (N=728) by one half misdemeanants, one half felons , binomial distribution and final sample of 627 jail detainees and 3,481 from the general population in the five cities of the National Institute of Mental Health Epidemiological Catchment area program.	National Institute of Mental Health Diagnostic Interview Schedule (NIMH-DIS). DSM-III diagnosis scored from interview data by computer program written expressly for this purpose.	Prevalence rates of three severe mental disorders by age and race: major depressive episode, manic episode, schizophrenia. Statistical procedure: Taylor Series Linearization, loglinear analysis.	Prevalence rate of severe mental disorder significantly higher (two to three times) in typical urban jail than in general population. Six percent of all incoming jail detainees suffer from current psychotic illness. Observed jail rates of schizophrenia, major depression, mania two to three times higher than in general population.
Swanson, Holzer, Ganju, & Jono (1990) ***study examines relationship between violence and psychiatric disorders among adults in the community.***	Epidemiological prevalence study, secondary analysis of survey, using interviews, psychiatric assessments, self reports. Data based on National Institute of Mental Health Epidemiological Catchment Area (ECA) project.	Data drawn from NIMH's Epidemiologic Study. Weighted samples of adult household residents pooled to form a data base of 10,059 people.	Diagnostic Interview Schedule (DIS), epidemiological tables, multivariate model of predictors developed.	Examined: prevalence of psychiatric disorder among those who reported violent behavior, patterns of violence by diagnosis. Statistical procedure: frequency analyses, logistic regression analyses.	DSM-III axis I diagnosed have five times higher prevalence rate of violence than people not diagnosable. Similar prevalence rates of violence for those diagnosed schizophrenic, major depressed, mania/bi polar. Prevalence findings for violence twelve times higher for diagnosed alcoholics and sixteen times for substance abusers than persons receiving no diagnosis.

Epidemiological					
Authors(s) Dates	*Design/Data Collection*	*Subjects/ Sampling*	*Data Collection Tool/ Instruments*	*Analysis*	*Central Findings*
Link, Andrews, & Cullen (1992) ***Study compares mental patients and never-treated community residents on official and self reported measures of violent illegal conduct***	Epidemiological prevalence study, survey, based on data from epidemiological study of psychiatric patients and community residents from Washington Heights, New York City, using interviews, arrest data, self reports, census tract data	Combined respondents from Dohrenwend et al (1986) patient and community samples. Four subgroups: 1. First-treatment contact patients (N=83), 2. Repeat-treatment contact patients (N=173), 3. former patients (N=111), 4. never-treated community residents (N=386). Compared rates of arrest and self-reported violence.	Psychiatric Epidemiology Research Interview (PERI), DSM-III diagnosis through clinical records & interviews, epidemiological tables.	Used 6 indicators of violence: self-reported arrests, official arrests, hitting others, fighting others, fighting, weapon use in a fight & control variables of sociodemographic characteristics, community context, homicide rates, need for approval scale, psychotic symptoms. Statistical procedure: logistic regression coefficients, Chi square, logit model	All three patient groups more violent than never-treated community sample. Most likely to be violent less educated males. Qualified finding of elevated rates of violent/illegal behavior among mental patients with current psychotic symptoms and possibility that inappropriate reactions of others to psychotic symptoms may assist in production of violent/illegal behavior.

Epidemiological					
Authors(s) Dates	*Design/Data Collection*	*Subjects/ Sampling*	*Data Collection Tool/ Instruments*	*Analysis*	*Central Findings*
Link & Stueve (1994) ***Study examines the relationship between psychotic symptoms and violent behavior***	Epidemiological study, extension/ reanalysis of 1992 epidemiological survey data, using interviews. DSM-III diagnoses using clinical records and unstructured interviews.	Used same data as in Link and Stueve (1992), which used data from community and psychiatric patients in earlier study (Dohrenwend, '86) using outpatient clinic and inpatient community services and households in New York City's Washington Heights area.	PERI, census data, DSM-III diagnosis, Crown-Marlow need for approval scale, epidemiological tables.	Same control variables as 1992 study. Violence/ illegal behavior measured by hitting, fighting weapon use. Looked for kind of psychotic symptoms that explain mental disorder and violence relationship. Statistical procedures: logistic regression, regression coefficients, Chi square. Study highlights analyses combining first-contact, repeat-contact, former patients into one group and never-treated community in other.	3 symptoms on psychotic symptoms scale explain mental disorder/violence association: mind dominated by forces beyond control, thoughts in head not one's own, people wishing to do you harm, called threat control/ override symptoms.

Epidemiological					
Authors(s) Dates	*Design/Data Collection*	*Subjects/ Sampling*	*Data Collection Tool/ Instruments*	*Analysis*	*Central Findings*
Teplin, Abram, & McClelland (1994) **Study examines whether detainees with severe mental disorders (schizophrenia or major affective disorders), substance abuse disorders (alcohol and drug), or psychotic symptoms (hallucinations and delusions) are rearrested more often for violent crimes six years after release than are nondisordered detainees.**	Six-year longitudinal study using epidemiological tables and follow up arrest data, prevalence rate. Data (1984) from Cook County Department of Corrections, Chicago Police Department, Cook County Medical Examiner's Office, Illinois Department of Corrections. Interviews by clinical psychologists.	728 male urban jail detainees, random sample, subjects stratified by arrest charge (one half felons, one half misdemeanants) and weighted to reflect distribution.	National Institute of Mental Health Diagnostic Interview Schedule (NIMH-DIS).	Prevalence rates of schizophrenia and major affective disorders (e. g., major depressive episode, manic episode) by age and race. Diagnostic groups measured against 4 dependent variables of recidivism: probability of arrest any violent crime (felony or misd.), probability of arrest for major violent crime (all felonious violent crimes excluding robbery), number or arrests for any violent crime, number of arrests for major crime. Statistical procedures: data analyzed using epidemiological framework, loglinear analysis, one tailed tests, bootstrap techniques, post hoc power analysis, difference of proportion tests, epidemiological tables, t tests.	Neither severe mental disorder nor substance abuse or dependence predicted the probability of arrest or the number of arrests for violent crime. Persons with symptoms of both hallucinations and delusions had a slightly higher number of arrests for violent crimes. Does severe mental disorder or substance abuse dependence predict the probability of arrest or the number of arrests for violent crime? Findings do not support stereotype that mentally ill invariably commit violent crime after release. Data do confirm one of best indicators of future violent crime is prior violent crime. Major finding: psychiatric disorder irrelevant to probability of arrest for violent crime after release.

Table 4 Exemplars and Key Studies

Meta-Analyses					
Authors(s) Dates	*Design/Data Collection*	*Subjects/ Sampling*	*Data Collection Tool/ Instruments*	*Analysis*	*Central Findings*
Mossman (1994) Article (a) discusses problems of validity of violence prediction studies which are hampered by quantifying accuracy that do not control for base rates or biases in favor of certain outcomes, and (b) proposes the use of ROCs in the assessment of accuracy of the predictions about violence.	Uses Receiver Operating Characteristics (ROC) analysis to re evaluate attempts to detect or predict violence in studies between 1974-1993. Reports evaluated included studies familiar to researcher from prior research, supplemented by studies found searching titles and abstracts in MEDLINE and PsycLIT data bases from 1972 forward.	Reanalyzes 58 data sets from 44 studies on violence prediction of 16,000 psychiatric patients, indictees, and parolees.	ROC curves to depict clinician's ability to differentiate violent from nonviolent subject through the use of ROCFIT and ROC Analysis software.	Studies characterized as falling into one of four broad types: clinical judgement, past behavior, discriminant function retrospective, discriminant function prospectively validated. ROCs simultaneously independent of base rate in populations studied and cutoff scores.	Data strongly suggests that mental health professionals violence predictions substantially more accurate than chance. Short-term (1-7) day clinical predictions seem to be no more accurate than long-term (1 year). Past behavior alone appears to be a better long-term predictor of future behavior than clinical judgements and may also be a abetter indicator than cross-validated actuarial techniques. Limitation: trade-off between sensitivity and specificity.

Meta-Analyses					
Authors(s) Dates	*Design/Data Collection*	*Subjects/ Sampling*	*Data Collection Tool/ Instruments*	*Analysis*	*Central Findings*
Bonta, Henson, & Law (1998) **Studied whether the predictors of recidivism for mentally disordered offenders are different from the predictors for nondisordered offenders**	Studies gathered from published (edited journals and books) and unpublished sources (working papers and theses) covering 1959-1995. Searches made on two computerized databases: PsychLIT and NCJRS.	A meta-analysis of longitudinal, prospective studies in which effect size magnitudes were calculated for 74 predictors based on 64 unique samples, which produced 548 correlations with general and violent recidivism. Two general sets of information coded for each study: (a) potential predictors of recidivism (e. g., criminal history, psychiatric status, and (b) variables related to characteristics of the study and the sample (e. g., sample size and year of study). Studies used had to have used a longitudinal design and enough statistical data to allow for calculation of effect size.	Raw statistics taken directly from the study and the conversion to effect size estimates calculated by Moira Law. Pearson r. Ley's Formula 12:8. Q statistic to test homogeneity. VRAG scale used to illustrate application of the results from the meta-analysis for evaluating an actuarial risk scale.	Predictors were grouped into four domains: 1. Personal demographics, 2. Criminal history, 3. Deviant life-style, 4. Clinical. The dependent variable was assessed at two levels: officially documented general recidivism and violent recidivism.	The major predictors of recidivism (objective risk assessment, adult criminal history, juvenile delinquency) were the same for mentally disordered offenders as for the non-disordered defenders. Best predictors were criminal history predictors (e. g., prior convictions, age of criminal involvement). Clinical variables showed lowest effect size, with the exception of antisocial personality disorder and a history of psychiatric admissions. Findings suggest greater attention be devoted to social psychological literature and less reliance on psychopathology models.

Table 5

Standardized Instruments Commonly Used in Violence Prediction

Test Name/Acronym	Primary Citation
Antecedent history, Self-presentation, Social and Psychosocial Adjustment, Expectations and Plans, Symptoms, Supervision, Life Factors, Institutional Management, Sexual Adjustment, and Treatment Progress (ASSESS-LIST) (10-item clinical scheme used to assess dangerousness risk)	Webster, C. D., & Polvi, N. H. (1995). Challenging assessments of dangerousness and risk. In J. Ziskin (Ed.). Coping with psychiatric and psychological testimony (pp.221-240). Marina del Rey, CA: Law and Psychology Press.
Brief Psychiatric Rating Scale (BPRS) (A measure of psychopathology in which clinicians use data from semistructured interviews to rate patients on each of 18 symptom scales of 0 to 6) such as hostility, grandiosity, tension and correlate them to occurrence of physical assaults.	Overall, J. E., & Klett, C. J. (1972). Applied multivariate analysis. New York: McGraw-Hill.
Clinician's Global Rating (CGR) (An independent rating of a patient based on global scales of danger to self, others, grave disability)	Segal, S. P., Watson, M. A., Goldfinger, S. M., & Averbuck, D. S. (1988). Civil commitment in the psychiatric emergency room: 1. The assessment of dangerousness by emergency room clinicians. Arch Gen Psychiatry, 45, 748-752.
Conflict Tactics Scales (CT) (Measures family violence through categories of physical abuse)	Straus, M. (1979). Measuring intrafamily conflict and violence: The Conflict Tactics (CT) scales. Journal of Marriage and the Family, 41, 75-78.
Dangerous Behavior Rating Scheme (DBRS) (11 items rated on a 7 point Likert Scale based on Megargee's theoretical framework for assessing based on dangerousness)	Webster, C. D., & Menzies, R. J. (1993). Supervision in the deinstitutionalized community. In S. Hodgins (Ed.), Mental disorder and crime (pp. 22-38). Newbury Park: Sage.

Test Name/Acronym	Primary Citation
Diagnostic Interview Schedule (DIS) (A structured interview designed for use by lay persons to establish a provisional DSM-III diagnosis and if caused by physical illness, psychiatric disorder or substance abuse)	Robins, L. N., Helzer, J. E., Croughan, J., & Ratcliffe, K. (1981). National Institute of Mental health Diagnostic Schedule: Its history, characteristics, and validity. Arch Gen Psychiatry, 38, 381-389.
Global Assessment Functioning Scale (GAF) (Reports clinician's judgment of individual's overall functioning on a scale of 0 to 100)	Edicott, J. R., Sptizer, R., & Fleiss, J. (1976). The Global Assessment Scale: A procedure for measuring overall severity of psychiatric disturbance. Arch Gen Psychiatry, 33, 766-71.
HCR -20 (A 20-item instrument-guide used to assess risk for future behavior in criminal and psychiatric populations)	Webster, C. D., Eaves, Douglas, K., & Wintrup, A. (1995). The HCR-20 Scheme: The assessment of dangerousness and risk. Burnaby, British Columbia. Canada, Simon Fraser University and Forensic Service Commission of British Columbia.
Indicators of Mental Disorder Scale (IMDS) (A scale reflecting dimensions of mental disorder specified in state statutes, and addresses items including impulse control and affect)	Segal, S. P., Watson, M. A., Goldfinger, S. M., Averbuck, J. D. (1988). Civil commitment in the psychiatric emergency room: 2. Mental disorder indicators and three dangerousness criteria. Arch Gen Psychiatry, 45, 753-58.
Lagos Scale (A scale with four categories of violent behavior: attacks on persons, attacks on objects, threats to attack persons, verbal attacks on persons)	Lagos, J. M., Perlmutter, K., & Saexinger, H. (1977). Fear of mentally ill: Empirical support for the common man's response. American Journal of Psychiatry, 134, 1134-1137.
Lens Model a.k.a. Cue-Utilization or Multiple-Cue Probability Approach (A decision-theory model used to analyze judgments of dangerousness)	Hammond, K. R., Hursch, C. J., & Todd, F. J. (1964). Analyzing the components of clinical inference. Psychological Review, 71, 438-456.
Overt Aggression Scale (OAS) (A behavioral checklist that indicates which patients have exhibited aggressive physical behavior against other people, objects, or themselves, or have engaged in verbal aggression)	Yudofsky, S. C., Silver, J. M. Jackson, W. Endicott, J. , & Williams, D. (1986). The Overt Aggression Scale for the objective rating verbal and physical aggression. American Journal of Psychiatry, 143, 35-39.

Test Name/Acronym	Primary Citation
Psychiatric Epidemiology Research Interview (PERI) (Measures psychiatric symptoms and life events over a one month period or one-year time frame)	Dohrenwend, B. P., Shrout, P., Egri, G., & Mendelson, F. (1980). Measures of nonspecific psychological distress and other dimensions of psychopathology in the general population.
Psychopathy Checklist (PCL-R) (A 20-item checklist designed to assess a range of relevant personality traits and behaviors and which measures psychopathy, the personality types most likely to engage in antisocial and aggressive behavior)	Hare, R. D. (1990). The Psychopathy Checklist - Revised. Toronto: Multi-Health Systems.
Receiver Operating Characteristics (ROC) (A method of determining statistical accuracy independent of base rate by using a ROC curve to plot hit rates)	Mossman, D., & Somoza, E. (1991). Neuropsychiatric decision making: The role of disorder prevalence in diagnostic testing. Journal of Neuropsychiatry and Clinical Neurosciences, 3, 84-88.
Recidivism Prediction Scale (RPS), now called the Statistical Information on Recidivism Scale (SIR) (An empirically derived recidivism instrument used to predict general [violent/nonviolent] recidivism)	Nuffield, J. (1982). Parole decision making in Canada: Research towards decision guidelines. Ottawa: Solicitor General.
Three Ratings of Involuntary Admissibility (TRIAD) (An index reflecting the way admissions in psychiatric rooms interpret and apply the criteria danger to self, others, and grave disability)	Segal, S. P., Watson, M. A., & Nelson, L S. (1986). Indexing civil commitment in psychiatric emergency rooms. Ann Am Acad Polit Soc Sci, 484, 56-69.

Test Name/Acronym	Primary Citation
Violence Risk Appraisal Guide (VRAG) (Predicts recidivism among mentally disordered serious offenders using 12 variables)	Harris, G. T., Rice, M.E., & Quinsey, V. L. (1993). Violent recidivism of mentally disordered offenders: the development of a statistical prediction instrument. Criminal Justice and Behavior, 20, 315-335.
Violence Recidivism Scale (VRISK) (Predicts long-term risk of violent recidivism)	Villeneuve, D. B., & Quinsey, V. L. (1995). Predictors of general and violent recidivism among mentally disordered inmates. Criminal Justice and Behavior, 22(4), 397-410.

CHAPTER 4

IMPLICATIONS FOR SOCIAL WORK

The assessment of risk and the concomitant prediction of interpersonal violence are central to the diagnostic and prognostic skills that a clinician is required to employ on a regular basis. Across diverse clinical settings in the civil and criminal justice systems, in private practice, in profit or non profit, public or private organizations, the knowledge, awareness, and ability to assess the dangerousness of clients, patients, and prisoners is regularly requested of clinicians"who work in interpersonal violence ...to make predictions about violent behavior" (Limandri & Sheridan, 1995, p. 1). This chapter discusses violence forecasting as it applies to forensic social work practitioners who are called upon to make predictions of interpersonal violence for the court and for social workers in other settings where a systematic assessment of violence likelihood is indicated to protect the client and potential victims. Specifically, implications for social workers are detailed as they relate to (a) legal and ethical issues, (b) practice, (c) education, (d) policy, (e) research, and (f) prediction and prevention.

Legal and Ethical Issues

Personal liability for the failure of a clinician to warn potential victims is accepted by most legal experts to be based upon a landmark legal decision: *Tarasoff v. Regents of the University of California* (1976). Essentially, the court held that a therapist has a duty to protect potential victims if the patient is dangerous to others and is obligated to warn them "once a therapist does in fact determine, or under applicable professional

standards reasonably should have determined that a patient poses a serious danger of violence to others" (Tarasoff, 1976, p. 345). Borum (1996) states that this decision creates "obstacles for clinicians...in that no explicit national standards exist in psychology or other mental health disciplines for assessment and management of violence risk" (p. 945). Monahan (1996) indicates, relative to prediction of violence, that it is liability not constitutionality which "motivates interest." Campbell (1995) points out that duty to protect/warn for a therapist still is not a settled issue due to (a) "conflicting rulings" as to the extent of warning necessary to a potential victim, and (b) what is the clinical responsibility if the potential victim has prior knowledge as to the dangerousness of the patient. Additionally, there is the "protect" vs. "warn" debate. A therapist can protect a potential victim by hospitalizing the dangerous patient or modifying elements of the treatment plan without ever specifically warning the targeted victim. Whether you "protect" or "warn" varies by state legal requirements. But being able to "predict" is in either case an important professional responsibility. Milner and Campbell (1995) conclude that "warn" and "protect" are both legal and ethical issues in prediction for clinicians. "In addition to the legal duty to warn, professional organizations of psychiatrists and psychologists have ethical standards of practice that state that the therapist must warn potential victims" (p. 23).

Litwack (1994) cites *U. S. v. Sahhar* and *In re Young*, and Monahan (1996) cites *Barefoot v. Estelle* and *Schall v. Martin* as evidence that the U.S. Supreme Court and courts of appeal find constitutional the use of clinical predictions of violence.

Monahan further cites professional organizations such as the American Bar Association's Criminal Justice Mental Health Standards, the American Psychiatric Association's model state law on civil commitment, and the National Center for State Courts guidelines for involuntary civil commitment as evidence "that predictions of violence are here to stay" (p. 110). Monahan (1996) cites Grisso and Appelbaum (1992) to indicate

> that courts, even when directly confronted with research findings of 20% - 35% accuracy (true positive rates), would uphold the constitutionality of laws that relied on clinical violence prediction, [and that as a consequence] the research question began to shift from *whether* violence could be predicted to *how* violence prediction could be improved. (p. 112)

Miller and Morris (1988) critique the U. S. Supreme Court for relying on unsupported clinical predictions of dangerousness "absent validated statistical support" (p. 281) and state it has let to confusion in the judiciary in general and "notably poor" legal decisions by the Supreme Court in particular. They advocate statistical prediction be used in a complementary fashion when "clinical judgements firmly grounded on well-established base expectancy rates are a precondition, rarely fulfilled, to the just invocation of prediction of dangerousness as a ground for intensifying punishment" (p. 281). Gabor (1986) raises the issue of mental health professionals becoming "faced with a role conflict situation, as they are expected to perform simultaneously therapeutic and social control functions" (p. 18).

A major controversy over what constitutes ethics in dangerousness assessments by mental health professionals emerged in the 1990s between Litwack (1993) and Grisso and Appelbaum (1992, 1993). Litwack asserted that Grisso and Appelbaum in their 1992 article "*Is it Unethical to Offer Predictions of Future Violence*" stated that for assessments of dangerousness by mental health professionals to be ethical, they have to be predicated on a "scientific basis" or "scientific foundation" (i.e., empirical data defined as "studies identifying particular characteristics of research subjects who subsequently engaged in violent behavior supportive of the expert's conclusions" (pp.622-623). Litwack finds this definition problematic because

> (1) Many - if not most - of the most important *and most necessary assessments* of dangerousness by mental health professionals are not, *and cannot be*, be based on meaningful actuarial data, (2) To regard such assessments as "lacking a scientific foundation" requires a very limited view of the word *scientific, (3)* If such assessments are not scientific, the authors do not explain how it can possibly be ethical for mental health professionals to offer such assessments as "expert" testimony (p. 480).

Grisso and Appelbaum (1993) counter by stating that court "testimony that relies on actuarial base rates is the ideal...but that ethical guidelines may accept other forms of testimony....Testimony that raises a problem or is ethically questionable is not necessarily unethical; it is simply a subject for inquiry and debate concerning its ethical propriety" (p. 483).

Social workers should be aware that when engaged in violence prediction they will be subjected to criticism. Monahan (1981) cautioned of "attacks" on three fronts: (a) empirical: that fully accurate prediction would be impossible; (b) political: that prediction is viewed as a violation of civil liberties, in which punishment (commitment, intervention) is not based on past acts but projected future behavior); and, (c) professional: that prediction is destructive to mental health practitioners, in that mental health professionals could stand accused of becoming "agents of social control rather than benefactors for the welfare of the individual client" (p. 31).

Gottfredson and Gottfedson (1988) caution that two incompatible criminal justice goals: *utilitarian* and *desert*, create conflicting directions for those engaged with the criminal justice system The utilitarian perspective is based upon a philosophical construct which includes deterrence, treatment, rehabilitation, and incapacitation "based on the expectation of some future social good to result from a correctional sanction" (p. 257). The desert perspective conversely is focused on the philosophical belief in punishment for past crime proportionate to the seriousness of the crime and the damage done. To remedy this they suggest a *predictive decision-making strategy* "taking into account" both risk (likelihood of new offenses) and stakes (nature of crime expected if new offenses committed). This model is utilitarian conceptually, but allows for the desert orientation, and Gottfredson and Gottfredson cite its compatibility with the suggested compromise position of Miller and Morris (1988) in which "desert considerations should serve as 'limiting principles,' [making it feasible for social work

by] establishing the upper and lower bounds of punishment within which utilitarian concerns could be exercised" (p.258). In this "risk-to-stakes matrix" for social workers, "the seriousness of the action is weighed with the likelihood of repetition" (Limandri & Sheridan, 1995, p. 8)

Limandri and Sheridan (1995) raise a number of ethical considerations of which the social worker should be aware: (a) the individual rights of a perpetrator against the rights of safety of the community; (b) "When do societal rights supersede individual rights, or one person's rights supersede another's?" (p. 15); (c) the duality of intent of a social worker recommending commitment: social control or help for the client; (d) the type of treatment recommended; and, (e) the ability of the clinician, due to personal biases, to remain objective when making a prediction of dangerousness when race, ethnicity and class are a factor.

What should be the response of social workers to these legal/ethical issues when they are working with clients who are probable perpetrators? Milner and Campbell (1995) advise clinicians to:

1. clearly understand that they are simultaneously engaged in a situation in which there exists the conflictive obligations of (a) client confidentiality, and (b) likely victims being warned and protected; and,

2. be aware of the legal/ethical mandates of their professional organizations, which state the ethical/legal "standards of practice" regarding clinicians requirements to notify both individuals potentially in "physical danger" and "law enforcement agencies."

Practice

Social workers frequently make evaluations of the risk potential for the violent behavior of their clients. Borum (1996) indicates that

> mental health professionals are routinely required to assess and manage violence risk in clinical practice (e. g., Tarasoff-like situations) and must make these judgements in accord with applicable professional standards, despite the fact that no explicit standards exist. It seems the emerging body of scientific knowledge on violence risk assessment has advanced sufficiently to allow professional consensus on some core issues that could lead to some clearly articulated practice guidelines for assessing and managing people with mental disorder who may be at risk for violence. (p. 952)

Direct service practitioners require a grounding in the legal ramifications, theoretical underpinnings, and practice strategies congruent to violence prediction. Specifically:

1. practice guidelines preparing practitioners for tort liability are essential. Emphasis needs to be made as to Tarasoff accountablilty, with a focus on the reasonableness of decision-making by a clinician and the circumstances under which forewarning of potential victims needs to take place and the "protect" vs "warn" issue;

2. training in violence assessment and response for one's personal safety in any setting dealing with psychiatric or substance abusing patients or any client group subjected to high levels of stress and frustration; and,

3. development of forensic social work as a specialization is urged to meet increasing demands for assessment and planning with courts and services to the forensic population.

Social workers daily are required or requested to make either informal or formal predictions of dangerousness (Campbell, 1995; Werner, Rose, & Yesavage, 1990). Formal predictions involve those in judicial proceedings or settings. Informal predictions are those made under clinical circumstances to other mental health practitioners, and professionals within the mental health, civil and criminal justice systems and networks, and clients, their families, and possible victims. Ethical, legal, and professional mandates create conditions and circumstances in which "practitioners involved in work with violent or potentially violent clients have a great need for understanding the nature, process, and research status of prediction" (Milner & Campbell, 1995, p. 21).

Education

Borum (1955) recommends the development of a variety of training models and curricula for mental health's multiple disciplines to

> define assessment and management of violence risk as a proficiency area in accord with the American Psychological Association's emerging efforts to define specialty areas of competence in professional psychology...[or]...to develop a recommended curriculum for graduate training programs to incorporate into existing courses or to develop as a separate seminar...with core components

consisting of education about risk factors, decision making, management strategies, and approaches to handle the categories of action. (p. 954)

Training models and curricula involving the psychopathology of the violent and the potentially violent can, for student social workers best be incorporated into the educational milieu by providing for clinicians-in-training practical hands-on experience rooted in a solid theoretical foundation. This can be accomplished by social work schools offering (a) field placements and practice courses, and (b) a specialized curriculum in mental health and violence.

Field Placements and Practice Courses

It is suggested field placements and practice courses encompass the following.

1. Field placements in a variety of settings, in which violence prediction is made, should prepare the practitioner for assessing different types of risk, different types of decisions, and the assessment tasks required. Private practice parameters differ and must be understood in relation to institutional and hospital settings. Mechanic (1999) indicates "Most social workers are employed in organized mental health settings such as mental hospitals, specialized psychiatric units in general hospitals, and mental health centers and clinics" (p. 9). The mix of psychiatric clientele differs contingent upon setting. Mechanic cites Schappert that office-based patients primarily have "mood disorders such as major depression and dysthymia, anxiety disorders, and personality disorders," and hospital-based clientele are "more seriously ill patients, including patients with schizophrenia, major depression, bipolar-affective

disorders, and substance addictions" (p. 10).

2. Practice courses must prepare practitioners for the civil and criminal justice systems as they relate to commitment and detention and the differing concepts, interpretations and utilization of the concept of dangerousness. An understanding of caseflow, the framework of the systems, and their interdependence with the private sector is necessary.

Fellin (1996) states "The term *mental health system* is used to describe a national, state, or local community system" (p. 16). He cites the NIMH to indicate "that the system parts have multiple goals and 'are many and varied, including hospitals, clinics, nursing homes, jails and prisons, shelters for the homeless, hospital emergency rooms, health maintenance organizations, youth services agencies, and private practitioners'" (p. 16). The civil and criminal (forensic) components of the system run along parallel lines. Traditionally, governing bodies operated under the philosophy of *parens patriae* (sovereign authority to act as parent or guardian) and its concomitant police power to restrict the freedom of individuals in order to hold the mentally ill deemed as dangerous for their own good. Today, in most states, there is in addition the criteria of dangerousness/disability (dangerous to self, dangerous to others, grave disability) that must be proven. Both the civil and criminal systems interact, from levels of least to highest restrictiveness, including inpatient, outpatient, crisis stabilization, secure, state hospital.

In the civil system, dangerousness is handled through proceedings restricting an

individual's rights by voluntary or involuntary commitment. The forensic system has the added dimensions of court and jail, as a criminal act (felony or misdemeanor) has precipitated the action. Additionally, there are in the forensic system the added legal defenses of Incompetent to Proceed (ITP) and Insanity (Not Guilty by reason of Insanity), which may freeze the judicial process or eliminate the criminal charges. Rather than mental health professionals making the final determination on the mental status and dangerousness of the accused, in the forensic system a judge determines whether treatment or punishment is most applicable.

3. Practice courses must prepare social workers to function in agencies and programs where mission statements or operational perspectives or philosophies differ or may be conflictive with the *National Association of Social Work (NASW) Standards For The Practice Of Clinical Social Work* (1989) (e. g., when a criminal court client demands termination of treatment and a forensic social worker employed by the defense or the public defender's office acquiesces while knowing it is premature without referral to another appropriate treatment source, a violation of the NASW standards). Social workers need to be prepared to handle issues and occurrences of individual versus collective rights, desert versus utilization, and the demands of a defendant for placements contrary to recommendations by psychiatric and psychological evaluations.

4. Practice courses need to prepare students for the cultural diversity of populations served in private and institutional settings. Fellin (1996) indicates

"culturally sensitive mental health practice" may be accomplished by "consider[ing] factors such as the individual client's level and stage of acculturation, extent of biculturalism and marginality, and identification with the values of minority-majority cultures" (p. 149). To improve and enhance the service delivery and client-therapist effectiveness, he suggests the use of "ethnic minority therapists, ethnic client-therapist matching, use of bilingual/bicultural therapists" (p. 149). Field trips for social work students to correctional facilities, forensic and civil hospital, residential program, clinics and private settings are suggested to prepare them for the reality of working with diverse populations at the sites at which decision-making takes place.

5. Practice courses and field placements must prepare and provide experience for students in the use of clinical, actuarial, and epidemiological based prediction models so they can make effective and accurate recommendations when engaged with patients involved in the civil and the criminal court systems. In particular, emphasis should be on familiarization with basic clinical models (e. g. linear, hypothetico, risk management) as discussed in Chapter 3.

Specialized Curriculum In Mental Health and Violence

In a school of social work, based on the subject matter of this area specialization paper, it is suggested that the curriculum include:

1. classifying and defining violence. Students would be exposed to a mental health curriculum on the psychology of interpersonal violence. The objective would be the study of research leading to establishing a working definition of

violence/dangerousness for social workers;

2. violence causation. The broad range of theory as espoused by theorists, and how to link them to specific modalities of treatment;

3. an examination of the forensic and civil systems of mental health. Specific emphasis would be on social workers engaging the violent client; and,

4. an examination of mental illness and violence. Specifically, is there a relationship? A review of the literature, with the implications for social workers should be discussed and detailed. Emphasis should be placed on the role of the social worker vis-a-vis violence prediction in practice.

Policy

The American Heritage College Dictionary (Costello, 1993) provides two applicable definitions for policy:

> A plan of course of action, as of a government, political party, or business, intended to influence and determine decisions, actions, and other matters.
>
> A course of action, guiding principle, or procedure considered expedient, prudent, or advantageous (p. 1059).

Dobelstein (1996) defines public policy as "an action (or in some cases, an inaction) usually undertaken by a government, directed at a particular goal, and legitimated by the commitment of public resources" (p. 21).

The most formidable public policy is expressed through statute law (Dobelstein, 1996). This legislative expression of the process of policy making underlies

institutional policy and is reflected through individual case decisions in the courts. As stated by Gottfredson and Gottfredson (1988)

> In addition to being central to the decisions made in the criminal justice system, prediction is central to all plausible social policies governing such decisions *when those policies have a utilitarian or consequentialist purpose such as crime reduction* (for example, through rehabilitative, incapacitive, or deterrent strategies). (p. 247)

The public health and criminal justice policy perspectives, and whether they are perceived and funded as alternative or complementary approaches, are determined by differing ideological focuses on violence (Moore, 1993). The conceptual frameworks associated with preventive versus reactive and punishment versus treatment are reflected in mechanisms which either expend resources or concentrate their energies on arrest and prosecution or community policing and problem-solving policing (e.g., in which "hot spots" are identified with concomitant responses calculated to maintain the peaceableness of a given area). Moore suggests a synthesis of criminal justice and public health approaches in dealing with interpersonal violence is possible under ideal circumstances when beneficial to both perspectives. An example of this can be found in joint efforts to find ways in which to reduce violent offences through educational outreach in trying to alter children's attitudes about violence (Moore et al., 1994). "Utility and effectiveness, not theoretical purity, is the standard in policy and practical application" (Akers, 1994, p. II).

Policy directed toward institutions and the individual as it relates specifically to prediction are interrelated with Tarasoff liability. Monahan (1993) suggests risk policy should be developed "before the need for them arises in a given case" (p. 247). Risk containment can be enhanced through (a) written guidelines for clinicians, (b) external review of draft risk policy, (c) clinical staff being educated and compliance assured through periodic reviews by a "senior colleague" or "risk educator," and (d) "creation of user friendly forms" to document the actions articulated in the policy guidelines. The written guidelines should "reflect the minimal standards necessary for competent professional service" (p. 247). Monahan stresses that the development of profiles and policies should be realistic and conditioned by resources. An annual updating of the written guidelines is recommended based upon changes in "research, practice, or state law." An external review is recommended of risk policy by outside clinicians and counsel. Finally, staff education and compliance are recommended though audits and corrective actions, the purpose of which is to ensure timely revision of policies.

Clinical Research

Monahan (1996) cites three reports which itemize clinical violence prediction research needs into the next millennium:

1. The National Institute of Mental Health's *Caring for People with Severe Mental Disorders: A National Plan of Research to Improve Services*. The plan advocates research into accuracy of violence prediction as a consequence pf perceived "untested assumptions" and questionable predictions skills by mental health

professionals. Of concern is the state of practice in the area of civil and criminal commitment.

2. The National Research Council's *Understanding and Preventing Violence*, which asks for increased federal funding in violence research, especially examination of risk factors.

3. The National Institute of Health's *Report of the Panel on NIH Research on Antisocial, Aggressive, and Violence-Related Behaviors and Their Consequences*, which calls upon the government to increase allocations for research "on antisocial, aggressive, and violence related behaviors and their consequences. Focus on preventive intervention studies and on social, legal, and ethical issues is essential" (p. 118).

Individual researchers suggest multiple directions for future research. Teplin, Abram, and McClleland (1994) recommend examinations into specific mental disorder symptoms and violence and into comorbidity's association to violent crime. They advocate further research through the use of actuarial means and the types of stereotypes the news media use of mentally ill people and violence. Mulvey (1994) believes there is a need "to develop specific theories about the mechanisms linking mental illness and violence...the lack of theoretical clarity in this area is striking" (p. 667). Borum (1996) identifies the need for more advanced technology and instrumentation in the use of evaluations. He calls for clear cut "clinical practice guidelines" with the increasing use of paraprofessionals or poorly trained professionals

and the concomitant training requisite for mental health professionals. Litwack et al. (1993) indicates that "legal, or societal judgement" needs to be examined in the major question of "How great a risk of how much violence justifies a deprivation of liberty, and for how long?" (p. 265).

Prediction and Prevention

It is important for social workers to understand that prediction and prevention are strongly linked, as good prediction can clearly lead to prevention in individual cases where probable violence is deterred. Additionally, social workers need to focus on violence prevention at the societal level, as our knowledge of risk assessment tells us a lot about the independent/causal factors we can work on (e. g., drugs, poor post hospital follow-up, family violence). Van Soest and Bryant (1995) posit the multilevel nature of violence as being (a) individual, (b) institutional, and (c) structural-cultural to illustrate its dimensions. They indicate social workers [need] "to increase awareness of the pervasiveness and complexity of violence in society...[and the profession needs] to develop interventions directed at its root causes and institutional manifestations as well as its individual perpetrators and victims" (p. 555). Van Soest and Bryant conclude that the significance to social workers can be seen through the action of the NASW Delegate Assembly, which in 1993, "adopted the prevention of violence as one of the associations's top policy priorities" (p. 556).

Summary

Social workers are frequently required to predict client dangerousness. Every

time they are involved in prognosis they engage in a prediction. Whether working in the criminal or civil justice systems, at a for or not for profit employer, or in direct private practice, the accuracy of their predictions are a reflection on their individual and collective credibility. Recognition of social workers' influences as agents of social change at the micro and macro levels of practice in the mental health system is contingent upon the practitioner's ability to ensure that personal biases do not interfere with clinical judgement and that inaccurate prediction not penalize clients if it is the other way on the basis of the instrument with detention or deprivation of liberty. Whether called upon to make formal or informal predictions, social workers should keep in mind Milner and Campbell's (1995) articulation of the prediction issues for mental health practitioners:

> Practitioners are obligated to be as accurate as possible and to have considered the ethical dilemmas of (a) confidentiality versus warning, and (b) protection of individual rights versus the collective good...practitioners involved in work with violent or potentially violent clients have a great need for understanding the nature, process and research status of prediction. (pp. 20-21)

References

Agnew, R. (1992). Foundation for a general strain theory of crime and delinquency. Criminology, 30(1), 47-72.

Akers, R. L. (1994). Criminological theories: Introduction and evaluation. Los Angeles, CA: Roxbury.

American Psychiatric Association. (1980). Diagnostic and statistical manual of mental disorders (3rd ed.). Washington, DC: Author.

American Psychiatric Association. (1987). Diagnostic and statistical manual of mental disorders (3rd ed., rev.). Washington, DC: Author.

American Psychiatric Association. (1994). Diagnostic and statistical manual of mental disorders (4th ed.). Washington, DC: Author.

Appelbaum, P. S. (1985). Tarasoff and the clinician: Problems in fulfilling the duty to protect. American Journal of Psychiatry, 142(4), 425-429.

Apperson, L. J., Mulvey, E. P., & Lidz, C. (1993). Short-term clinical prediction of assaultive behavior artifacts of research methods. American Journal of Psychiatry, 150(9), 1374-1379.

Bandura, A. (1979). The social learning perspective: Mechanisms of aggression. In H. Toch (Ed.), Psychology of crime and criminal justice (pp.198-236). New York: Holt, Rinehart & Winston.

Binder, R. L., & McNiel, D. E. (1988). Effects of diagnosis and context on dangerousness. American Journal of Psychiatry, 145(6), 728-732.

Bonta, J., Hanson, K., & Law, M. (1998). The prediction of criminal and violent recidivism among mentally disordered offenders: A meta-analysis. Psychological Bulletin, 123(2), 123-142.

Borum, R. (1996). Improving the clinical practice of violence risk assessment: technology, guidelines, and training. American Psychologist, 51(9), 945-956.

Brain, P. F. (1994). Hormonal aspects of aggression and violence. In A. J. Reiss, Jr. & J. A. Roth (Eds.), Understanding and preventing violence (Vol. 2, pp. 173-244). Washington, DC: National Academy Press.

Bridges, G. S., & Weis, J. G. (1989). Measuring violent behavior: Effects of study design on reported correlates of violence. In N. A. Weiner & M. E. Wolfgang (Eds.), Violent crime, violent criminals (pp. 14-34). Newbury Park, CA: Sage.

Brizer, D. A. (1989). Introduction: Overview of current approaches to prediction and violence. In D. A. Brizer & M. Crowner (Eds.), Current approaches to the prediction of violence (pp. xi-xxiii). Washington, DC: American Psychiatric Press.

Brownfield, D. (1986). Social class and behavior. Criminology, 24(3), 421-438.

Brunswick, E. (1956). Perception and the representative design of psychological experiments. Berkeley, CA: University of California Press.

Burgess, R. L., & Akers, R. L. (1966). A differential association-reinforcement theory of criminal behavior. Social Problems, 14, 128-147.

Campbell, J. C. (Ed.) . (1995). Assessing dangerousness: Violence by sexual offenders, batterers, and child abusers. Thousand Oaks, CA: Sage.

Carey, G. (1994). Genetics and violence. In A. J. Reiss, Jr. & J. A. Roth (Eds.), Understanding and preventing violence (Vol. 2, pp. 21-58). Washington, DC: National Academy Press.

Chaiken, J., Chaiken, M., & Rhodes, W. (1994). Predicting violent behavior and classifying offenders. In A. J. Reiss, Jr. and J. A. Roth (Eds.), Understanding and preventing violence (Vol. 4, pp. 217-295). Washington, DC: National Academy Press.

Clark, R. V. (1990). Situational crime prevention: Its theoretical bases and practical scope. In M. Tonry & N. Morris (Eds.), Crime and justice: An annual review of research (pp. 225-256). Chicago, IL: University of Chicago Press.

Cocozza, J. J., & Steadman, H. J. (1976). The failure of psychiatric predictions of dangerousness: Clear and convincing evidence. Rutger's Law Review, 29, 1084-1101.

Cohen, A. K. (1983). Crime causation: Sociological theories. In S. H. Kadish (Ed.), Encyclopedia of crime and justice (Vol. 1, pp. 342-353). New York: Free Press.

Cohen, P., & Cohen, J. (1984). The clinician's illusion. Archives of General Psychiatry, 41(12), 1178-82.

Cooper, R., & Werner, P. (1990). Predicting violence in newly admitted inmates: A lens model of staff decision making. Criminal Justice and Behavior,17(4), 431-437.

Costello, R. B. (Ed.) . 1993. The American Heritage college dictionary (3rd edition). New York: Houghton Mifflin.

Curran, D. J., & Renzetti, C. M. (1994). Theories of crime. Boston, MA: Allyn and Bacon.

Davis, S. (1991). An overview: Are mentally ill people really more dangerous? Social Work, 36(2), 174-180.

Dawes, R., Faust, D., & Meehl, P. (1989). Clinical versus actuarial judgement. Science, 243(4899), 1668-1674.

Dershowitz, A. M. (1974). The origins of preventive confinement in Anglo-American Law: The English experience. University of Cincinnati Law Review, 4, 1-60.

Dobelstein, A.W. (1996). Social welfare: Policy and analysis. Chicago, IL: Nelson-Hall.

Dohrenwend, B. P. P., Shrout, G., Egri, G., & Mendelsohn, F. (1980). Nonspecific psychological distress and other dimensions of psychopathology: Measures for use in the general population. Archives of General Psychiatry, 37(11), 1229-1236.

Dohrenwend, B. P. P., Shrout, B., Link, J., Martin, & Skodal, A. (1986). Overview and initial results from a risk factor study of depression and scizophrenia. In J. E. Barret & R. M. Rose (Eds.), Mental Disorders In the Community (pp.184-215). New York: Guilford.

Eaton, W. W., & Kessler, L. G. (1985). Epidemiologic field methods in psychiatry: The NIMH Epidemiological Catchment Area Program. Orlando, FL: Academic.

Edicott, J. R., Sptizer, R., & Fleiss, J. (1976). The Global Assessment Scale: A procedure for measuring overall severity of psychiatric disturbance. Arch Gen Psychiatry, 33(6), 766-71.

Edwards, W. (1954). The theory of decision making. Psychological Bulletin, 51(4), 380-417.

Fellin, P. (1996). Mental health and mental illness: Policies, programs, and services. Itasca, IL: F. E. Peacock.

Florida Mental Health Act F.S. 394.455 Definitions (18). 1997.

Fraser, M. W. (1995). Violence overview. In Encyclopedia of social work (19th edition, pp. 2453-2460). Silver Spring, MD: National Association of Social Workers.

Freud, S. (1933). New Introductory lectures on psycho-analysis. Edited and translated by James Strachey. New York: Norton.

Gabor, T. (1986). The prediction of criminal behavior: Statistical approaches. Toronto, Canada: University of Toronto Press.

Glaser, D. (1983). Crime causation: The field. In S. H. Kadish (Ed.), Encyclopedia of crime and justice (Vol. 1, pp. 307-308). New York: Free Press.

Gondolf, E. W., Mulvey, E. P., & Lidz, C. W. (1990). Characteristics of perpetrators of family and non family assaults. Hospital and Community Psychiatry, 41(2), 191-193.

Gottfredson, D. M., & Gottfredson, S. D. (1988). Stakes and risks in the prediction of violent criminal behavior. Violence and Victims, 3(4), 247-262.

Gottfredson, D. M, Wilkens, L. T., & Hoffman, P. B. (1978). Guidelines for parole sentencing: A policy control method. Lexington, MA: Lexington.

Grisso, T., & Appelbaum, P. S. (1992). Is it unethical to offer predictions of future violence? Law and Human Behavior, 16(6), 621-633.

Grisso. T., & Appelbaum., P. S. (1993). Structuring debate about ethical predictions of future violence. Law and Human Behavior, 17(4), 482-485.

Harris, G. T., Rice, M. E., & Quinsey, V. L. (1993). Violent recidivism of mentally disordered offender: The development of a statistical prediction instrument. Criminal Justice and Behavior, 20(4), 315-335.

Harry, B., & Steadman, H. J. (1988). Arrest rates of patients treated at a community mental health center. Hospital and Community Psychiatry, 39(8), 862-866.

Hodgins, S. (1992). Mental disorder, intellectual deficiency, and crime: Evidence from a birth cohort. Archives of General Psychiatry, 49(6), 476-483.

Holcomb, W. R., & Ahr, P. R. (1988). Arrest rates among young adult psychiatric patients treated in outpatient and inpatient settings. Hospital and Community Psychiatry, 39(1), 52-57.

Kaplan, H. I., Sadock, B. J., & Grebb, J. A. (1994). Synopsis of psychiatry: behavioral sciences, clinical psychiatry. Baltimore, MD: Williams & Wilkins.

Kessler, R. C., McGonagle, K. A., Zhao, S., Nelson, C. B., Hughes, M., Eshleman, S., Wittchen, H., & Kendler, K. S. (1994). Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: Results from the natiional comorbity study. Archives of General Psychiatry 51(1), 8-19.

Klassen, D, & O' Connor , W. (1988). A prospective study of predictors of violence in adult male mental patients. Law and Human Behavior, 12(2), 143-158.

Klassen, D, & O' Connor, W. (1989). Assessing the risk of violence in released mental patients: A cross-validation study. Psychological Assessment: A Journal of Consulting and Clinical Psychology, 1(2), 75-81.

Kozol, H.L., Boucher, R. J., & Garofalo, R. E. (1972). The diagnosis and treatment of dangerousness. Crime and Delinquency, 18(4), 371-392.

Lagos, J. M., Perlmutter, K., & Saexinger, H. (1977). Fear of mentally ill: Empirical support for the common man's response. American Journal of Psychiatry, 134(11), 1134-1137.

Lamb, J. H. (1996). Crime in the making: Pathways and turning points. In P. Cordella, P., & L. Siegel (Eds.), Readings in contemporary criminological theory (pp. 240-256). Boston, MA: Northeastern University Press.

Lidz, C. W., Mulvey, E. P., & Appelbaum, P. S. (1989). Commitment: The consistency of clinicians and the use of legal standards. American Journal of Psychiatry, 146(2), 176-181.

Lidtz, C. W., Mulvey, E. P., & Gardner, W. (1993). The accuracy of predictions of violence to others. Journal of the American Medical Association, 269(8), 1007-1011.

Lilly, J. R., Cullen, F. T., & Ball, R. A. (1995). Criminological theories: Context and consequences. Thousand Oaks, CA: Sage.

Limandri, B. J., & Sheridan, D. J. (1995). Prediction of intentional personal violence: An introduction. In J. C. Campbell (Ed.), Assessing dangerousness: Violence by sexual offenders, batterers, and child abusers (pp. 1-19). Thousand Oaks, CA: Sage.

Link, B. G, Andrews, H. A., & Cullen, F. T. (1992). The violent and illegal behavior of mental patients reconsidered. American Sociological Review, 57(3), 275-92.

Link, B. G., & Stueve, A. (1994). Psychotic symptoms and the violent/illegal behavior of mental patients compared to community controls. In J. Monahan & H. J. Steadman (Eds.), Violence and mental disorder: Developments in risk assessment (pp. 137- 159). Chicago, IL: University of Chicago Press.

Link, B. G., & Stueve, A. (1995). Evidence bearing on mental illness as a possible cause of violent behavior. Epidemiological Reviews, 17(1), 172-181.

Link, B. G., & Stueve, A. (1998). New evidence on the violence risk posed by people with mental illness: On the importance of specifying the timing and the targets of violence. Archives of General Psychiatry, 55(5), 403-404.

Litwack, T. R. (1993). On the ethics of dangerousness assessments. Law and Human Behavior, 17(4), 479-482.

Litwack, T. R. (1994). Assessments of dangerousness: Legal, research, and clinical developments. Administration and policy in mental health, 21(5), 361-77.

Litwack, T. R., Kirschner, S. M., & Wack, R. C. (1993). The assessment of dangerousness and predictions of violence: Recent Research and future prospects. Psychiatric Quarterly, 64(3), 245-273.

MacArthur Research Network on Mental Health and the Law. (1996a, May 20). The MacArthur Violence Risk Assessment Study [Executive Summary posted on the World Wide Web], Charlottesville, Virginia: Author. Retrieved July 16, 1997 from the World Wide Web: http//www.apa.org/journals/webref.htm.

MacArthur Research Network on Mental Health and the Law. (1996b, May 20). The MacArthur Violence Risk Assessment Study [Executive Summary (revised) posted on the World Wide Web], Charlottesville, Virginia: Author. Retrieved July 26, 1998 from the World Wide Web: http//www.apa.org/journals/webref.htm.

McFarland, B. H., Faulkner, L. R., Bloom, J. D., Hallaux, R., & Bray, J. D. (1989). Chronic mental illness and the criminal justice system. Hospital and Community Psychiatry, 40(7), 718-723.

McNiel, D. E., & Binder, R. L. (1989). Rlationship betweeen preadmission threats and later violent behavior by acute psychiatric inpatients. Hospital and Community Psychiatry, 40(6), 605-608.

McNiel, D. E., & Binder, R. L. (1991). Clinical assessment of risk of violence among psychiatric inpatients. American Journal of Psychiatry, 148(10), 1317-1321.

McNiel, D. E., & Binder, R. L. (1994). Screening for risk of inpatient violence: Validation of an actuarial tool. Law and Human Behavior, 18(5), 579-586.

McNiel, D. E., Binder, R. L., & Greenfield, T. (1988). Predictors of violence in cilvilly committed acute psychiatric patients. American Journal of Psychiatry, 145(8), 965-70.

Mechanic, D. (1999). Mental health and social policy: The emergence of managed care (4th Ed.). Needham Heights, MA: Allyn and Bacon.

Meehl, P. E. (1954). Clinical versus statistical prediction. Minneapolis, MN: University of Minnesota Press.

Meehl, P. E. (1957). When shall we use our heads instead of the formula? Journal of Counseling Psychology, 4(4), 268-273.

Meehl, P. E. (1986). Causes and effects of my disturbing little book. Journal of Personality Assessments, 50(3), 370-375.

Megargee, E. J. (1976). The prediction of dangerous behavior. Criminal Justice and Behavior, 3(1), 3-22.

Meloy, J. R. (1987). The prediction of violence in outpatient psychotherapy. American Journal of Psychotherapy, 41(1), 38-45.

Menzies, R., & Webster, C. D. (1995). Construction and validation risk assessment in a six-year follow-up of forensic patients: A tridimensional analysis. Journal of Consulting and Clinical Psychology, 62(5), 766-778.

Mercy, J. A., & O'Carrol, P. W. (1988). New directions in violence prediction: The public health arena. Violence and Victims, 3(40), 285-302.

Mercy, J. A., Rosenberg, M. L., Powell, K. E., Broome, C. V., & Roper, W. L. (1993). Public health policy for preventing violence. Health Affairs, 12 (4), 7-29.

Miczek, K. A., Mirsky, A. F., Cary, G., DeBold, J., & Raine, A. (1994). An overview of biological influences on violent behavior. In A. J. Reiss, Jr. & J. A. Roth (Eds.), Understanding and preventing violence (Vol. 2, pp. 1-20). Washington, DC: National Academy Press.

Merton, R. K. (1938). Social structure and anomie. American Sociological Review, 3(5), 672-82.

Miller, M., & Morris, N. (1988). Predictions of dangerousness: An argument for limited use. Violence and Victims, 3(4), 263-283.

Milner, J. S., & Campbell, J. C. (1995). Prediction issues for practitioners. In J. C. Campbell (Ed.), Assessing dangerousness: Violence by sexual offenders, batterers, and child abusers (pp.20-40). Thousand Oaks, CA: Sage.

Mirsky, A., & Siegel, A. (1994). The neurobiology of the brain. In A. J. Reiss, Jr. & J. A. Roth (Eds.), Understanding and preventing violence (Vol. 2, pp. 59- 172). Washington, DC: National Academy Press.

Monahan, J. (1981). Predicting violent behavior: An assessment of clinical techniques. Beverly Hills, CA: Sage.

Monahan, J. (1983). Prediction of crime and recidivism. In S. H. Kadish (Ed.), Encyclopedia of crime and justice (Vol. 3, pp. 1170-1177). New York: Free Press.

Monahan, J. (1984). The prediction of violent behavior: Toward a second generation of theory and policy. American Journal of Psychiatry, 141(1), 10-15.

Monahan, J. (1992). Mental disorder and violent behavior: Perceptions and evidence. American Psychologist, 47(4), 511-521.

Monahan, J. (1996a). Mental illness and violent crime (pamphlet). Washington, DC: National Institute of Justice.

Monahan, J. (1996b). Violence prediction: The past twenty years and the next twenty years. Criminal Justice and Behavior, 23(1), 107-120.

Monahan, J. (1997). Clinical and actuarial predictions. In D. Faigeman, D. Kaye, M. Saks, & J. Sanders (Eds.), Modern scientific evidence: The law and science of expert testimony (Vol. 1, pp. 300-318). St. Paul, MN: West.

Monahan, J., & Klassen, D. (1982) Situational approaches to understanding and predicting violent behaviors. In M. Wolfgang and N. Weiner (Eds.), Criminal violence (pp. 292-319). Beverly Hills, CA: Sage Publications.

Monahan, J., & Steadman, H. J. (1994). Toward a rejuvenation of risk assessment research. In J. Monahan & H. J. Steadman (Eds.), Violence and mental disorder: Developments in risk assessment (pp. 1-17). Chicago, IL: University of Chicago Press.

Moore, M. H. (1993). Violence prevention: Criminal justice or health. Health Affairs, 12(4), 34-45.

Moore, M. H., Prohtrow-Stith, D., Guyer, B., & Spivak, H. (1994). Violence and intentional injuries: Criminal justice and public health perspectives on an urgent national problem. In A. J. Reiss, & J. A. Roth (Eds.), Understanding and preventing violence (Vol 4, pp. 167-216). Washington, DC: National Academy Press.

Mossman, D. (1994). Assessing predictions of violence: Being accurate about accuracy. Journal of Consulting and Clinical Psychology, 62(4), 783-792.

Mossman, D., & Somoza, E. (1991). Neuropsychiatric decision making: The role of disorder prevalence in diagnostic testing. Journal of Neuropsychiatry and Clinical Neuroscience, 3(1), 84-88.

Mulvey, E. P. (1994). Assessing the evidence of a link between mental illness and violence. Hospital and Community Psychiatry, 45(7), 663-668.

Mulvey, E. P., & Lidz, C. W. (1985). A critical analysis of dangerousness research in a new legal environment. Law and Human Behavior, 9(2), 209-219.

National Association of Social Workers (1989). NASW standards for the practice of clinical social work. Annapolis, MD: Author.

Newhill, C.E. (1992). Assessing danger to others in clinical social work practice. Social Science Review, 66(1), 64-84.

Otto, R. K. (1992). Prediction of dangerous behavior: A review and analysis of 'second generation' research. Forensic Reports, 5(1), 103-133.

Policy Research Associates. (1993). Treatment of violent mentally ill persons in the community: Issues of policy, services and research. Delmar, New York: Author.

Pollock, V., Mednick, S. A., & Gabrielli, Jr., W. F. (1983). Crime causation: Biological theories. In S. H. Kadish (Ed.), Encyclopedia of crime and justice (Vol. 1, pp. 308-316). New York: Free Press.

Quay, H. C. (1983). Crime causation: Psychological theories. In S. H. Kadish (Ed.), Encyclopedia of crime and justice (Vol. 1, pp. 330-342). New York: Free Press.

Quinsey, V., Rice, M., & Harris, G. T. (1995). Actuarial prediction of sexual recidivism. Journal of Interpersonal Violence, 10(1), 85-105).

Rabkin, J. G. (1979). Criminal behavior of discharged mental patients: A critical appraisal of the research. Psychological Bulletin, 86(1), 1-27.

Rafter, N. H. (1992). Criminal anthropology in the United States. Criminology, 30(4), 525-545.

Reiss, A. J., Jr., & Roth, J. A. (Eds.) . (1993). Perspectives on Violence. In A. J. Reiss, & J. A. Roth (Eds.), Understanding and preventing violence (pp.101-181). Washington, DC: National Academy Press.

Rice, M. E. (1997). Violent offender research and implications for the criminal justice system. American Psychologist, 52(4), 414-421.

Rice, M. E., & Harris, G. T. (1995). Violent recidivism: Assessing predictive validity. Journal of Consulting and Clinical Psychology, 63(5), 737-748.

Robins, L. (1993). Childhood conduct problems, adult psychopathology, and crime. In S. Hodgins (Ed.), Mental disorder and crime. Newbury Park, England: Sage.

Robins, L. N., Helzer, J. E., Croughan, J., & Ratcliffe, K. (1981). National Institute of Mental health Diagnostic Schedule: Its history, characteristics, and validity. Arch Gen Psychiatry, 38, 381-389.

Sampson, R. J., & Groves, W. B. (1989). Community structure and crime: Testing social-disorganization theory. American Journal of Sociology, 94(4), 774-802.

Sampson, R. J., & Lauritsen, J. L. (1994). Violent victimization and offending: Individual-, situational-, and community-level risk factors. In A. J. Reiss & J. A. Roth (Eds.), Understanding and preventing violence (Vol 3, pp. 1-114). Washington, DC: National Academy Press.

Satel, S., & Jaffe, D. J. (1998, July 20). Psychobabble: Violent fantasies. National Review, 50(13) 36-37.

Schuerman, L., & Korbin, S. (1984). Exposure of community mental health clients to the criminal justice system: Client criminal or patient prisoner? In L. A. Teplin (Ed.), Mental health and criminal justice (pp.87-118). Beverly Hills, CA: Sage Publications.

Segal, S. P., Watson, M. A., Goldfinger, S. M., & Averbuck, D. S. (1988a). Civil commitment in the psychiatric emergency room. Archives of General Psychiatry, 45,(8) 748-752.

Segal, S. P., Watson, M. A., Goldfinger, S. M., & Averbuck, D. S. (1988b). Civil commitment in the psychiatric emergency room. Archives of General Psychiatry, 45(8), 753-758.

Shore, D., Filson, C. R., & Rae, D. S. (1990). Violent crime arrest rates of White House Case subjects and matched control subjects. American Journal of Psychiatry, 147(6), 746-750.

Simon, D. (1991). An overview: Are mentally ill people really more dangerous? Social Work, 36(2), 174-180.

Slaby, R. G., & Guerra, N. G. (1988). Cognitive mediators of aggression in adolescent offenders: I. assessment. Developmental Psychology, 24(4), 580-588.

Slaby, R. G., & Guerra, N. G. (1990). Cognitive mediators of aggression in adolescent offenders: 2. Intervention. Developmental Psychology, 26(2), 269-277.

Somoza, E., & Mossman, D. (1990). Introduction to neuropsychiatric decision making: Binary diagnostic tests. Journal of Neuropsychiatry and Clinical Neurosciences, 2(3), 297-300.

Somoza, E., & Mossman, D. (1992). Comparing diagnostic tests using information theory: The INFO-ROC technique. Journal of Neuropsychiatry and Clinical Neurosciences, 4(2), 214-219.

Steadman, H. H. (1977). A new look at recidivism among Patuxent inmates. Bulletin of the American Academy of Psychiatry and the Law, 5, 200-209.

Steadman, H. J., & Cocozza, J. J. (1974). Careers of the mentally criminally insane: Excessive social control of deviance. Lexington, MA: Heath, Lexington.

Steadman, H. J., Monahan, J., Appelbaum, P. S., Grisso, T., Mulvey, E. P., Roth, L. H., Robbins, P.C., & Klassen, D. (1994). Designing a new generation of risk assessment research. In J. Monahan & H. J. Steadman (Eds.), Violence and mental disorder: Developments in risk assessment (pp. 297-317). Chicago, IL: University of Chicago Press.

Steadman, H. J., Mulvey, E. P., Monahan, J., Robbins, P. C., Appelbaum, P. S., Grisso, T., Roth, L. H., & Silver, E. (1998). Violence by people discharged from acute psychiatric inpatient facilities and by others in the same neighborhoods. Archives of General Psychiatry, 55(5), 393-401.

Swanson, J. W. (1994). Mental disorder, substance abuse, and community violence: An epidemiological approach. In J. Monahan & H. J. Steadman (Eds.), Violence and mental disorder: Developments in risk assessment (101-136). Chicago, IL: University of Chicago Press.

Swanson, J. W., Borum, R., Swartz, M., & Monahan, J. (1996). Psychotic symptoms and disorders and the risk of violent behavior in the community. Unpublished manuscript.

Swanson, J. W., & Holzer, C. E. (1991). Violence and the ECA data. Hospital and Community Psychiatry, 42(9), 954-955.

Swanson, J. W., Holzer C. E. 3rd, Ganju, V. K. , & Jono, R. T. (1990). Violence and psychiatric disorder in the community: Evidence from the Epidemiologic Catchment Area surveys. Hospital Community Psychiatry, 41(7), 761-70.

Swets, J. A. (1988). Measuring the accuracy of diagnostic systems. Science, 240(4857), 1285-1293.

Swets. J. A. (1992). The science of choosing the right decision threshold in high stakes diagnostics. American Psychologist, 47(4), 522-532.

Tardiff, K., & Sweillam, A. (1980). Assault, suicide, and mental illness. Archives of General Psychiatry, 37(2), 164-169.

Tarasoff v. Regents of the University of California. 131 Cal. Rptr. 14, 551 P.2d 334 (1976).

Teplin, L. A. (1984). Criminalizing mental disorder: The comparative arrest rate of the mentally ill. American Psychologist, 39(7), 794-803.

Teplin, L. A. (1985). The criminology of the mentally ill: A dangerous misconception. American Journal of Psychiatry, 142(5), 593-599.

Teplin, L. A. (1990). The prevalence of severe mental disorder among male urban jail detainees: Comparison with the epidemiological catchment area program. American Journal of Public Health, 80(6), 663-669.

Teplin, L. A., Abram, K. M., & McClelland, G. M. (1994). Does psychiatric disorder predict violent crime among released jail detainees? A six year longitudinal study. American Psychologist, 49(4), 335-342.

Thornberry, T. P. (Ed.) . (1997). Developmental theories of crime and delinquency (Vol. 7). New Brunswick, Ct: Transaction.

Thornberry, T. P., & Farnworth, M. (1982). Social correlates of criminal involvement: Further evidence on the relationship between social status and criminal behavior. American Sociolcgical Review, 47(4), 505-517.

Thornberry, T. P., & Jacoby, J. E. (1979). The criminally insane: A community follow-up of mentally ill offenders. Chicago, ILL: University of Chicago Press.

Torrey, E. F. (1994). Violent behavior by individuals with serious mental illness. Innovations & Research: In Clinical Services, Community Support, and Rehabilitation, 3(3), 5-17.

Van Der Pligt, J. (1995a). Decision making. In A. S. R. Manstead & M. Hewstone (Eds.), The Blackwell encyclopedia of social psychology (pp. 168-173). Cambridge, MA: Blackwell.

Van Der Pligt, J. (1995b). Prospect theory. In A. S. R. Manstead and M. Hewstone (Eds.), The Blackwell encyclopedia of social psychology (pp. 460-463). Cambridge, MA: Blackwell Publishers.

Van Soest, D. V., & Bryant, S. (1995). Violence reconceptualized for social work: The urban dilemma. Social Work, 40(4), 549-557.

Villeneuve, D., & Quinsey, V. (1995). Predictors of general and violent recidivism among mentally disordered inmates. Criminal Justice and Behavior, 22(4), 397-410.

Walters, G. D. (1992). A meta-analysis of gene-crime relationship. Criminology, 30(4), 595-613.

Werner, P. D., Rose, T. L., & Yesavage, J. A. (1983). Reliability, accuracy, and decision-making strategy in clinical predictions of imminent dangerousness. Journal of Consulting and Clinical Psychology, 51(6), 815-825.

Werner, P. D., Rose, T. L., Yesavage, J. A., & Seeman, K. (1984). Psychiatrists' judgements of dangerousness in patients on an acute care unit. American Journal of Psychiatry, 141(2), 263-266.

Werner, P. D., Rose, T. L., & Yesavage, J. A. (1990). Aspects of consensus in clinical predictions of imminent violence. Journal of Clinical Psychology, 46(4), 534-538.

White, H. D. (1994). Scientific communication and literature retrieval. In H. Cooper & L. V. Hedges (Eds.), The handbook of research synthesis (pp. 41- 55). New York: Russell Sage.

Wilson, J. Q., & Herrnstein. R. J. (1985). Crime and Human Nature. New York: Simon and Schuster.

Wolman, B. B. (Ed.) . (1989). Dictionary of behavioral science (Second ed.). New York: Academic Press.

Yudofsky, S. C., Silver, J. M. Jackson, W. Endicott, J. , & Williams, D. (1986). The Overt Aggression Scale for the objective rating verbal and physical aggression. American Journal of Psychiatry, 143(1), 35-39.