

## VIOLENCE RISK ASSESSMENT Getting Specific About Being Dynamic

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Substantial strides have been made in the field of violence risk assessment. Numerous robust risk factors have been identified and incorporated into structured violence risk assessment instruments. The concepts of violence prevention, management, and treatment have been infused into contemporary thinking on risk assessment. This conceptual development underscores the necessity of identifying, measuring, and monitoring changeable (dynamic) risk factors—the most promising targets for risk reduction efforts. However, empirical investigation of dynamic risk is virtually absent from the literature. In this article, the authors (a) differentiate *risk status* (interindividual risk level based largely on static risk factors) from *risk state* (intraindividual risk level determined largely by current status on dynamic risk factors), (b) analyze the relevance of contemporary risk assessment measures for capturing dynamic risk, and (c) distill potentially important dynamic risk factors from the literature in order to facilitate future research. Suggestions for theory development and research design are provided.

*Keywords:* violence, risk assessment, prediction, dynamic risk, psychiatric patients

Given legal developments and a transformation in the financing and structure of the mental health care system in the United States, the demands of violence risk assessment are changing (Monahan, 1996). Hospital stays have been shortened dramatically over the past two decades with the advent of managed health care and policies of providing treatment in the least restrictive setting available (Kiesler & Simkins, 1993; Lerman, 1981; Narrow, Regier, Rae, Manderscheid, & Locke, 1993). Currently, “Even patients estimated to be at high risk of violence to others may be discharged in a few weeks, or increasingly, in a few days, assuming that they are ever hospitalized in the first place” (Monahan et al., 2000, p. 13). Thus, potentially violent patients increasingly are being treated in community-based settings (Mulvey, Geller, & Roth, 1987; Simon, 1997; Slobogin, 1994). Clinicians who work with these patients often are responsible for providing effective outpatient services while optimizing public safety (Petrila, 1995; Rice & Harris, 1997; *Shelton v. Tucker*, 1960; *Tarasoff v. Regents of California*, 1976). Achieving this delicate balance requires ongoing risk assessment that focuses intervention efforts on factors related to violence potential. Decisions about violence risk have far-reaching legal and public policy implications (e.g., Are statutes being abided by? Are persons’ legal rights to liberty being affected only

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on the basis of well-founded risk decisions? As a matter of policy, are agencies charged with making risk decisions using the most defensible procedures?), and hence risk factors and decisions must be understood as clearly as possible.

Balancing the responsibility of effective risk management and protection of public safety is most challenging with patients who are repeatedly violent. Violent incidents tend to be concentrated in a small but critical subgroup of the population, and this holds true for the patient population as well (Monahan, Bonnie, et al., 2001). For example, Gardner, Lidz, Mulvey, and Shaw (1996) found that the most seriously violent 5% of psychiatric patients accounted for nearly half (45%) of all violent incidents. Although these high-risk patients are in many ways different from the “typical patient” in civil settings, and the “typical inmate” in correctional settings (Jemelka, Trupin, & Chiles, 1989), they may share several features with mentally disordered offenders. Specifically, high-risk psychiatric patients often have histories of arrest (e.g., Skeem et al., 2004), and mentally disordered offenders typically have long histories of hospitalization (e.g., Fisher et al., 2002). The extent to which individuals with mental illness who are at high risk for violence *per se* are at disproportionate risk for involvement in both the mental health and criminal justice systems (a variant of “transinstitutionalization”) is unclear. Nevertheless, clinicians working in these systems face the challenge of assessing and treating these high-risk individuals, and may increasingly do so in community-based settings. In addition to this reality, clinicians continue to be responsible for managing and reducing risk while these individuals are institutionalized.

Despite remarkable progress in violence risk assessment technology over recent years, little guidance is presently available to clinicians who must monitor, treat, and make decisions about these individuals on an ongoing basis, whether in the community or in an institution. The bulk of past research focuses on *risk status*, or identifying individuals at high risk of violent behavior relative to other people (Mulvey, Lidz, Shaw, & Gardner, 1996). Risk status emphasizes static risk factors for violence, leaving little room for change in risk over time. For this reason, risk status is of limited utility when monitoring or treating an identified high-risk individual. While being at high risk as a function of static risk factors might give clinicians some idea of the intensity of intervention required to stem future violence, it does little to direct specific intervention or management efforts toward meaningful targets (Douglas & Kropp, 2002). High-risk individuals share elevated risk status, but risk ebbs and flows over time within each individual. To be maximally effective in the key task of reducing violence potential, clinicians “must go beyond evaluating baseline risk status, which focuses on interindividual variability in risk, to assessing *risk state*, which focuses on intraindividual variability in violence potential” (Skeem & Mulvey, 2002, p. 118). Thus, the key task in many risk assessment and management contexts is to evaluate risk factors and their variability over time, rather than assuming that point estimates will remain valid indefinitely (Douglas, Cox, & Webster, 1999; Douglas & Kropp, 2002; Webster, Douglas, Belfrage, & Link, 2000). As observed by Dvoskin and Heilbrun (2001):

An individual’s risk [state] may be seen as changing over time and in response to interventions, as contrasted with the single, unchanging risk [status] estimate

yielded under the prediction model by actuarial tools that use static (unchangeable through planned intervention) risk factors. (p. 8)

Most risk assessment tools have been developed with the assumption that they will be applied to make single-point predictions of violence (i.e., release decisions), although some risk assessment models attempt to integrate the concepts of reassessment and dynamic risk (Andrews & Bonta, 1994; Douglas, Webster, Hart, Eaves, & Ogloff, 2001; Grann, Belfrage, & Tengström, 2000; Grann et al., 2005; Webster, Douglas, Eaves, & Hart, 1997). Given the legal and economic changes mentioned earlier, however, risk assessment has become the process of making “ongoing, day-to-day decisions about the management and treatment of mentally disordered persons” (Steadman et al., 1993, p. 41). These daily decisions call for the specification of conditions that aggravate or mitigate risk, rather than an “on-off, context-free prediction of dangerousness based on a consistent algorithm” (Mulvey & Lidz, 1995, p. 136; Skeem, Mulvey, & Lidz, 2000; Webster et al., 2000). Ultimately, the goal of risk assessment is violence prevention, not prediction (Hart, 1998).

To meet this goal, the field’s next greatest challenge is to develop sound methods for assessing changeable aspects of violence risk and systematic methods for targeting these aspects to reduce violence (Dvoskin & Heilbrun, 2001). Addressing these challenges would be associated with significant practical payoffs. First, with an improved ability to assess change in violence potential over time, clinicians could make more informed decisions about when intervention was needed to reduce acute exacerbations of risk, how much individuals had responded to treatment, and whether levels of supervision should be modified. Second, with empirically supported methods for targeting changeable aspects of violence risk, clinicians could better judge when to intervene to reduce risk. These payoffs would be most pronounced in the context of treating high-risk (status) individuals in the community, where effective risk monitoring and risk reduction could prevent a large proportion of violent incidents from occurring.

In this article, we summarize what is currently known about violence risk state for psychiatric patients, mentally disordered offenders, and forensic patients. First, we analyze the construct of risk state, including models of dynamic risk, complexities in assessing dynamic risk, and the few empirical studies of the predictive utility of risk state. Second, we introduce a content-based typology of promising and potentially dynamic risk factors. We conclude with recommendations for theory, research, and critical practice issues.

### Risk State

Although the concept of violence risk state is relatively new to the academic field (though practicing clinicians typically work under this model, if even implicitly), interest in the construct has been growing over recent years. Risk state may be defined as an individual’s propensity to become involved in violence at a given time, based on particular changes in biological, psychological, and social variables in his or her life (Skeem & Mulvey, 2002). Central to this construct is a recognition that risk factors vary in the extent to which they are changeable, ranging from highly static variables (e.g., gender, race, history of violence) to

highly dynamic ones (e.g., substance use, weapon availability) (Heilbrun, 1997; see also Kazdin, Kraemer, Kessler, Kupfer, & Offard, 1997; Kraemer et al., 1997). Static risk factors describe an individual's risk status, whereas a combination of static and dynamic factors describes an individual's risk state. In this section, we review conceptualizations of key facets of risk state, measures that have attempted to operationalize risk state, and studies of the predictive utility of risk state.

### *Conceptualizations of Risk State*

Several scholars have conceptualized risk as a dynamic entity. Although these conceptualizations overlap in their emphasis on the need to better understand dynamic risk to reduce violence, each outlines a different contour of the risk state construct.

*Risk state and relevance to intervention.* Heilbrun (1997) distinguished between two risk assessment models based on their psycholegal goals: violence *prediction* versus violence *reduction*. The latter model may be used most often by clinicians, given that the prototypic risk assessment scenario has shifted from one-time predictions of violence associated with civil commitment and long-term institutionalization to ongoing risk assessment and management while working with potentially violent individuals in the community (Monahan, 1996).<sup>1</sup> Unlike the violence prediction model, the violence reduction model (a) emphasizes dynamic risk factors, particularly those that can be changed by intervention; (b) involves a high degree of contact with and control over the individual after the initial risk assessment (e.g., in ongoing treatment, outpatient commitment, and probation or parole contexts); and (c) has strong implications for planning treatment and (if implemented well) for establishing a collaborative treatment alliance. Largely through emphasis on dynamic risk factors and risk reduction, the model establishes concrete links among assessment, treatment, and decision making (see Heilbrun, Nezu, Keeney, Chung, & Wasserman, 1998).

Although these concepts are fairly new in the violence risk assessment field, they have older roots in correctional theory and the task of assessing risk for general recidivism. Andrews, Bonta, and Hoge's (1990) principles of *risk*, *need*, and *responsivity* link offender risk assessment with interventions designed to reduce criminal recidivism. The risk principle posits that high-risk offenders can be identified and targeted for intensive treatment, and that greater resources should be allotted to higher risk persons. According to the need principle, this treatment should focus directly on *criminogenic needs*, or dynamic risk factors that, "when changed, are associated with changes in the probability of recidivism" (Andrews & Bonta, 2003, p. 261). According to the responsivity principle, treatment should be tailored to the abilities and learning styles of the offender. Most relevant is the focus on criminogenic needs as the "change agent" for risk. On the basis of a comprehensive review, Dowden and Andrews (2000) found that

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<sup>1</sup>We note that, while dynamic risk might be most relevant in community settings, clearly it applies in institutional settings as well, as clinicians must identify and reduce risk factors while persons are institutionalized. In fact, this might be a necessity for persons to actually be released from institutions.

correctional treatment programs that focused on criminogenic needs (e.g., pro-criminal attitudes, anger and hostility, poor family supervision) were more effective in reducing recidivism than those focused on noncriminogenic needs (i.e., such traditional psychosocial treatment targets as anxiety, depression, and low self-esteem).

*Risk state and causation.* Closely related to this concept of relevance to intervention is the extent to which a dynamic risk factor is causally related to change in risk state. According to the definitional typology developed by Kraemer and colleagues (1997), identifying *causal dynamic risk factors* (for violence) is essential for effective intervention. A causal dynamic risk factor is a variable that has been shown to:

1. precede and increase the likelihood of violence (i.e., be a risk factor);
2. change spontaneously or through intervention (i.e., be a dynamic factor); and
3. predict changes in the likelihood of violence when altered (i.e., be a causal dynamic risk factor).

The latter prong in this list is most vital for understanding and altering risk state. A plausible explanation of the mechanism by which a dynamic risk factor relates to outcome can bolster an argument that the risk factor is a causal one. However, it is often difficult to discern the relation between these risk factors and outcomes. The relation could be direct, moderated or mediated by a third variable, or altogether caused by a third variable. For example, if disinhibition resulting from alcohol use is causally related to violence potential, monitoring and reducing a patient's drinking will reduce the likelihood of violence. However, drinking may be only a proxy variable—or *risk marker* in Kraemer and her colleagues' terms (Kraemer et al., 1997)—for involvement with a peer group that repeatedly engages in antisocial and violent behavior (Skeem & Mulvey, 2002). In this case, violence potential would remain unchanged even if drinking was reduced. Changing the peer group association would be the appropriate target of monitoring and intervention. As is evident in this discussion, identifying causal dynamic risk factors for violence is crucial for developing focused interventions to reduce risk.

*Risk state and rapidity of change.* Adding a layer to this complexity, dynamic risk factors likely differ in their rapidity of change. Hanson and Harris (2000) distinguished *stable* and *acute* dynamic risk factors. Stable dynamic factors (e.g., traits of impulsivity or hostility) are unlikely to change over short periods of time, but can change gradually. In contrast, acute dynamic factors (e.g., drug use) could, in principle, change daily or hourly. To set a valid schedule for assessing and monitoring risk state, a clinician must have a sense for the speed at which an individual's most important (causal) dynamic risk factors will change. A schedule of monitoring that does not approximate this rate of change will miss ebbs and flows in risk state—including those associated with intervention. Unfortunately, to date, there are very few if any systematic data on the rapidity with which risk factors change over time, and hence this distinction between acute and stable dynamic risk factors remains a hypothetical, though useful, concept.

*The multifactorial nature of risk state.* Even at early stages in the development of the concept of violence risk state, it is crucial to bear in mind that violence typically has no single cause. Instead, violence is a transactional process that likely reflects multiple causal risk factors and pathways—it is multiply determined. Thus, while attempting to understand risk state, one must attend to the relations among dynamic risk factors. According to Kraemer, Stice, Kazdin, Offord, and Kupfer (2001), three factors must be considered when there are two or more plausible causal dynamic risk factors for violence. These are *temporal precedence* (e.g., whether psychiatric deterioration comes before or after medication noncompliance), *correlation* (e.g., whether the two are correlated), and *dominance* (e.g., whether the effects of psychiatric deterioration alone, medication noncompliance alone, or an interaction between the two maximally predict violence). By assessing these factors, one may determine whether one of the dynamic risk factors is a proxy risk factor for another variable, overlaps substantially with another variable, mediates or moderates another variable, or is an independent and causal risk factor for violence. Again, identifying the most important causal dynamic risk factors for violence that are amenable to modification through treatment has the greatest potential for risk reduction.

### *Operationalizations of Risk State*

As suggested earlier, science lags behind practice when it comes to operationalizing risk state. To date, the scientific focus on dynamic risk and risk management has been more conceptual than empirical. Currently, there are no empirically validated instruments specifically designed to assess risk state. However, two groups of instruments hold promise and require further research: general risk assessment guides that include some ostensibly dynamic risk factors, and specific risk assessment guides that explicitly focus on capturing risk state.

*General assessment guides.* Some general risk assessment guides include scales or items that assess putatively changeable risk factors and may be useful for assessing components of risk state. These guides tend to follow a structured professional judgment model rather than an actuarial one. *Actuarial* instruments (e.g., Monahan, Steadman, et al., 2001; Quinsey et al., 1998) involve a mechanistic algorithm or rule for combining risk factors in order to arrive at a final decision about violence risk. Although actuarial guides could, in theory, include causal dynamic risk factors, extant measures heavily weight static variables, nearly to the exclusion of dynamic ones. In contrast, *structured professional judgment* (SPJ) instruments do not rely on statistically selected items and decision algorithms. Instead, clinicians make final risk ratings of low, moderate, or high risk for violence that are explicitly tied to anticipated levels of intervention efforts and a consideration of risk factors that have support within the scientific and professional literatures (Douglas & Kropp, 2002; Douglas et al., 2001; Hart, 1998; Webster, Douglas, Eaves, & Hart, 1997). The SPJ approach tends to include greater emphasis on dynamic risk factors than does the actuarial approach.

Two instruments with SPJ features are particularly promising for dynamic risk assessment (see also Dvoskin & Heilbrun, 2001). The first is the Historical/Clinical/Risk Management-20 (HCR-20; Webster et al., 1997), a heavily researched SPJ instrument relevant to general aggression. The second is the Level

of Service Inventory—Revised (LSI-R; Andrews & Bonta, 1995), which shares features of the SPJ approach (logical item selection), but relies on an algorithm to make decisions (actuarial).

The LSI-R is a 54-item instrument for criminal offenders that may characterize both risk status and risk state. Risk state is captured through assessment of criminogenic needs (i.e., causal dynamic risk factors) that may function as treatment targets. Several of the LSI-R's 10 scales tap ostensibly dynamic risk factors (e.g., Attitudes/Orientation, Companions, and Alcohol/Drug Problems). The LSI-R is potentially relevant to samples of mentally disordered offenders, given the similarity of violence predictors across such samples (Bonta et al., 1998). Moreover, the LSI-R is useful for predicting violent recidivism (Gendreau, Goggin, & Smith, 2002), despite its focus on general recidivism. Preliminary research with small samples indicates that LSI-R scores are sensitive to change that does occur, and that these changes themselves predict recidivism (although violent recidivism has specifically not been investigated in this regard). In a study of 57 non-disordered offenders, Andrews and Robinson (1984) found a significant positive relation between offenders' LSI-R score change over a 12-month period and their risk of subsequent recidivism. Motiuk (1993) reported similar findings with 54 non-disordered inmates.

The HCR-20 is a 20-item violence risk assessment tool that contains 10 historical, largely static risk factors such as history of violence, and 10 potentially dynamic risk factors, including 5 that reflect current mental and clinical status (the Clinical scale) and 5 that reflect future situational risk factors (the Risk Management scale). Although most research on the HCR-20 focuses on mentally disordered offenders, general offenders, and forensic patients (for reviews, see Arbisi, 2003; Buchanan, 2001; Cooper, 2003; Mossman, 2000; Witt, 2000), its predictive utility has been found in at least two samples to generalize to psychiatric patients (Douglas, Ogloff, Nicholls, & Grant, 1999; McNeil, Gregory, Lam, Binder, & Sullivan, 2003; Nicholls, Ogloff, & Douglas, 2004). As explained next, the Clinical and Risk Management scales of the HCR-20 have been found to change over time and relate to violence (although whether *changes* in the Clinical scale and the Risk Management relate to *changes* in violence potential has not been studied).

*Specific risk state guides.* Unlike general assessment guides that include putatively dynamic factors, some risk assessment guides focus specifically on assessing change in risk state over time or in response to treatment. Unfortunately, however, very little data on the psychometric properties of these instruments are available. Nevertheless, the most promising instruments are listed here as tools that may be validated in future research. Each of these guides was developed for mentally disordered offenders or forensic samples.

First, Quinsey, Coleman, Jones, and Altrows (1997) developed the Problem Identification Checklist Scales (PICS) to supplement the actuarial Violence Risk Appraisal Guide (Harris, Rice, & Quinsey, 1993; Quinsey, Harris, Rice, & Cormier, 1998), which could not "be used to predict when an offender might reoffend or to suggest when the intensity of supervision should be increased or decreased because of changes in the offender's circumstances or mental state" (p. 797). Data on 110 mentally disordered offenders were used to refine and examine the utility of the scale. The rationally derived PICS consists of 67 items that tap

six problem areas (psychotic behaviors, skill deficits, procriminal behavior, mood problems, social withdrawal, and other rehabilitation obstacles) and four proximal indicators (dynamic antisociality, psychiatric symptoms, poor compliance, poor medication compliance/dysphoria). These items were scored based on a record review of the offender's state 6 months prior (problem areas) and 1 month prior (proximal indicators) to the index or control event (violent offending). The authors found that one of these dynamic risk factors predicted violent offending, after controlling for static factors: dynamic antisociality (procriminal sentiments, lack of remorse). Although this finding is promising, it seems that more of the measure's scales should predict proximate violence.

More data on the PICS's psychometric properties are forthcoming (Quinsey, Jones, Book, & Barr, 2004). The Ontario Forensic Risk Study (<http://pavlov.psyc.queensu.ca/~ofrs/DRAPmain>) was designed to validate the PICS by prospectively assessing whether mentally disordered offenders ( $N = 565$ ) from nine forensic hospitals obtained PICS scores that changed over time (repeated 1-month intervals, for an average of 33 months) and predicted proximate violence. Although Quinsey described some data from this study, he included only a small number of offenders and a statistically selected set of 8 PICS items that were combined to form a reduced scale. Small groups of offenders with sexual ( $n = 22$ ) or violent ( $n = 8$ ) incidents manifested increasing average scores on this scale prior to their incidents. Although this presentation left open the issue of whether PICS scores change over time and predict proximal violence, Quinsey and his colleagues described analyses of data from the larger study. Following the same approach used in their preliminary analyses, the authors first statistically selected 10 maximally violence-predictive PICS items, which appear to be from its Inappropriate Behaviors and Therapeutic Alliance subscales. These 10 items were combined to create a reduced violence subscale (the Dynamic Risk Appraisal Scale [DRAS]). The DRAS is a risk factor rating checklist that is completed by frontline staff and clinicians (each item being rated from [*no problems*] to [*severe problems*]). Its items consist of some psychopathy-like features (lack of remorse, poor empathy, anger), certain psychiatric symptoms (mania, suspiciousness, conceptual disorganization), poor treatment compliance, and poor therapeutic alliance.

As before, the authors found increasing scores on this subscale prior to violent incidents. Trajectory analyses revealed no subgroups of offenders with different trajectories, but indicated that Violence subscale scores (a time varying covariate) were significantly predictive of increases in the probability of becoming violent. Although these results are promising, they probably reflect this capitalization on chance, given the way in which the Violence subscale of the DRAS was derived. In addition, the breadth of items included in this Violence subscale is unclear.

Second, Wong and Gordon (1999) developed the Violence Risk Scale (VRS) to assess risk status and risk state for mentally disordered offenders who have completed treatment and are being considered for release. The measure taps both static and dynamic risk factors, and is heavily oriented toward assessing treatment progress and informing risk management plans. Unlike the PICS, the VRS is a prototypic SPJ measure that is based on an interview and review of records. It is designed to produce pretreatment risk level ratings and posttreatment risk level ratings that reflect a combination of 6 static (e.g., age of onset of violent

offending) and 20 dynamic (e.g., violent lifestyle, criminal attitudes, community support) risk factors. According to the manual, the VRS has been used to assess more than 2,000 offenders. It demonstrates adequate internal consistency and interrater reliability, and is strongly predictive of violent recidivism during a 2-year follow-up period ( $AUC$  [receiver operating characteristic curve] = .81;  $r = .46$ ). The authors have preliminary support for the notion that the VRS taps risk state: Although pretreatment violent convictions were moderately associated with pretreatment VRS scores, only posttreatment (not pretreatment) VRS scores were significantly associated with violent recidivism ( $r = .26$ ).

Third, Grann, Haggård, et al. (2000; Grann et al., 2005) developed the Structured Outcome Assessment and Community Risk Monitoring (SORM) for forensic clients and mentally disordered offenders who are discharged to the community. Although somewhat similar to the HCR-20, the SORM has broader item coverage and explicitly incorporates reassessment routines for community monitoring (Grann et al., 2005). The SORM contains 27 risk factors across five domains (current services and interventions, social situation, social network, clinical factors, subjective ratings). Clinicians indicate the presence and severity of each risk factor for the given time period and its perceived relevance to the outcome of concern. The outcome of concern may be risk for violence, other criminal acts, and criminogenic or “risky” situations. Grann et al. (2005) described an ongoing prospective, repeated-measures study of the SORM in which 74 participants had been followed and reassessed, on average, 10 times each, with the intent that each participant would undergo a monthly reassessment over the course of 2 years. Preliminary analyses from this ongoing study indicated that the SORM possessed excellent item-level interrater reliability (mean  $\kappa = .88$ ;  $n = 20$ ), and that SORMs completed at baseline were as predictive of violence over a 10-month period ( $AUC = .71$ ) as the HCR-20 ( $AUC = .74$ ) and the Psychopathy Checklist: Screening Version ([PCL:SV]  $AUC = .67$ ). As expected, given the SORM’s relatively broad targets, the SORM predicted “risk situations” and “other criminal acts” more strongly than these other instruments. Given that the SORM is a relatively new addition to the field, data on the extent to which the measure changes over time and predicts proximate violence are not yet available.

Finally, scales for which there are no published data are available and have been in use in forensic settings. The Violent Behavior Analysis was developed by Norman Poythress for use in a forensic facility to assess risk state for insanity acquittees being considered for transfer or release (see Heilbrun, 1997). It is a semistructured interview, supplemented by collateral information, that “assesses patterns of thinking, emotion, and behavior that recur across violent acts” (Heilbrun, 1997, p. 351). A modified version of this, the Analysis of Aggressive Behavior (Heilbrun, 1991), has been in use with NGRI acquittees in Virginia for some time, and is designed to assess change in risk state over time, especially at crucial decision points. It includes a risk management plan that focuses intervention on dynamic risk factors on an ongoing basis.

### *Predictive Utility of Dynamic Risk*

There is a small body of empirical literature on dynamic risk. In this section, we focus on the few studies that have actually evaluated dynamic risk factors *qua*

dynamic risk factors. That is, while there have been many studies of the relation between single time-point estimates of hypothetically dynamic risk factors (i.e., psychosis) and violence, far fewer have investigated whether changes in these risk factors account for changes in the probability of violence. Studies of single time-point estimates can evaluate whether *interindividual* levels of certain risk factors, frozen at a particular time, predict violence. However, they cannot address the issue of *intraindividual* levels of risk factors. It is this intraindividual change aspect of a dynamic risk factor that makes it dynamic. It is also this aspect that holds promise for effective risk management and treatment.

Although very few studies of adults address this issue, several studies of children and adolescents have assessed how changes in risk factors affect delinquency or aggression (Brame, Nagin, & Tremblay, 2001; Kochenderfer-Ladd & Wardrop, 2001; McDermott & Nagin, 2001; Nagin, 1999; Nagin & Tremblay, 1999, 2001; Osgood & Smith, 1995; Spieker, Larson, Lewis, Keller, & Gilchrist, 1999). The latter studies provide excellent methodological examples of how to assess longitudinal change in risk, but their results are not directly relevant to adults because the nature and form of risk factors and violence are developmentally dependent (Borum, Bartel, & Forth, 2002). The few studies of adults may be classified into three groups: (a) those that rely upon *single time-point* evaluations of putatively dynamic variables, (b) those that assess such variables at *dual time-point evaluations*, and (c) those that evaluate dynamic risk factors at *multiple time-point evaluations* (i.e., three or more). Given the difficulty and cost of obtaining multiple time-point assessments, the number of time-point evaluations is inversely related to the number of studies in each group.

*Single time-point estimates.* Studies that use single time-point estimates of a putatively dynamic construct are by far the most common. Nevertheless, these cannot be viewed as true studies of dynamic risk, even if they are held out to be so (Beech, Friendship, Erikson, & Hanson, 2002; Dempster & Hart, 2002; Thornton, 2002). Although Beech, Fisher, and Thornton (2003) recently reviewed research on promising dynamic risk factors for sexual violence, almost all of the research relied on single time-point estimates of the risk factors or on between-groups comparisons of sex offenders and other groups. Such studies do not demonstrate that risk factors are, in fact, dynamic, and that changes in these factors predict violence.

*Dual time-point estimates.* A handful of studies use dual time-point evaluations to assess whether changes in risk factors predict violence. First, on the basis of a sample of 400 sex offenders, Hanson and Harris (2000) found that changes in anger and social influence across two time points added incremental utility to static risk factors in predicting sexual recidivism. However, the study was retrospective and relied on the potentially faulty recall of community corrections officers. These officers were asked to recall offenders' state with respect to several risk factors, both 1 month prior to recidivism (or prior to the current date, for nonrecidivists) and then 6 months prior to this. In some cases, officers were expected to recall offenders' status on dynamic risk factors as far back as 5 years. These officers, of course, were not blind to offenders' recidivism status. Although this study represents a novel and important contribution, a prospective design would provide stronger support for any link between dynamic risk factors and violence.

Some prospective, dual time-point evaluations of risk factors begin to provide such support. Hudson, Wales, Bakker, and Ward (2002) found that changes between two time points on 8 of 26 dynamic variables (e.g., anger, deviant sexual fantasies) predicted sexual violence, although typically with small-to-moderate effect sizes ( $r_s < .30$ ). Two small studies ( $N_s < 60$ ) of offenders reported that increases in scores on the LSI-R, between two assessment points, predicted increased levels of general recidivism (Andrews & Robinson, 1984; Motiuk, 1993). More indirectly, two studies suggest that the HCR-20 Clinical and Risk Management scales change over time (Belfrage & Douglas, 2002; Douglas & Belfrage, 2001), and several separate studies suggest that scores on these scales relate to violence (Belfrage, Fransson, & Strand, 2000; Dernevik, Grann, & Johansson, 2002; Douglas, Ogloff, & Hart, 2003; Douglas et al., 1999; Douglas & Webster, 1999a; Douglas, Yeomans, & Boer, in press; Gray et al., 2003; McNiel, Eisner, & Binder, 2003; Strand, Belfrage, Fransson, & Levander, 1999). However, research has yet to address whether changes in these HCR-20 scores themselves predict violence.

One large-scale, dual time-point study holds considerable promise for understanding dynamic risk. This multinational, North Atlantic Treaty Organization-funded prospective study of civil and forensic psychiatric patients (Hodgins et al., in press) is designed chiefly to evaluate risk assessment and treatment approaches among persons with mental disorders, but includes a repeated-measures approach. Thus, it is possible to evaluate whether changes in certain risk factors predict later community violence. Preliminary, unpublished evidence suggests that changes in several risk factors (i.e., symptoms of anxiety and depression) over two assessment periods predict community violence, even after controlling for multiple other risk factors (Freese, Hiscoke, & Hodgins, 2002). Despite the considerable strengths of this study, it is limited by the use of only two time points that (a) results in a single estimate that may not reliably capture change and (b) confines change to be linear (i.e., increasing or decreasing), whereas it might actually be curvilinear (i.e., quadratic, cubic).<sup>2</sup>

*Multiple time-point estimates.* Only one published study involves multiple time-point estimates of dynamic risk factors. This design can more reliably and validly capture change and its relation to violence than other methods. This study included 26 repeated measurements of hypothetically dynamic risk factors in a sample of 135 psychiatric patients (Mulvey, 2002). Because a screening tool was used to select a small subset of participants who were at high risk for repeated involvement in violence (Skeem, Mulvey, Lidz, Gardner, & Schubert, 2002), patients were predominantly young, dually diagnosed, and nonpsychotic individuals with a history of recent violence. These patients and collateral informants who knew their activities well were interviewed weekly for 6 months to assess for changes in key dynamic risk factors (i.e., substance abuse, psychiatric symptoms, relationship quality, treatment, residence) and their relation to violence. Analyses of the relations among drinking, drug use, and violence at the daily level (in 3-day spells) suggest that these events occur in acute bursts and are highly likely to

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<sup>2</sup>We again remind the reader that studies of childhood antisocial behavior have used multiple time points and assessed curvilinear change across these time points.

co-occur on a given day. The results also suggest that violence and use of alcohol and drugs other than marijuana “today” significantly predict whether violence will occur tomorrow or the following day. Recent violence most strongly predicted proximate violence, and there was no effect for marijuana use (Mulvey et al., 2005). Data analyses that focus on other potential dynamic risk factors for violence are underway. Clearly, this groundbreaking study will more definitively address the basic issues of whether and how dynamic risk factors change and whether and how these changes relate to violence. However, the findings may be restricted to a small (but highly policy-relevant) group of patients who are repeatedly involved in violence. Whether the findings will generalize to psychiatric patients and other samples (i.e., criminal justice populations) is an open question.

In summary, one cannot draw firm conclusions from these studies of dynamic risk for violence because there are few of them, and most have methodological limitations, including retrospective designs, small samples, and too few assessment points to characterize the nature of change. In fact, most investigations are not true studies of dynamic risk, in that they rely on a single time point to measure ostensibly dynamic factors. A few studies use dual time points to measure change in risk factors and their relation to violence, but this “snapshot” approach may not reliably and validly represent change. One well-designed study uses multiple time points to better capture change, but its results may be restricted to a highly select group of psychiatric patients and, more practically, the bulk await publication. Nevertheless, the little available research is consistent in suggesting that dynamic risk factors may be important in monitoring and ultimately reducing violence risk. This promise suggests that researchers should proceed with more informative types of investigations and more powerful statistical techniques.

### Review of Promising Dynamic Risk Factors

The few studies that have investigated the issue of dynamic risk suggest that changes in such factors relate to violence. However, it is unclear what the most promising dynamic risk factors are, for several reasons. First, not all studies have included the same risk factors, meaning that patterns across the few existing studies are not readily apparent. Second, some studies have focused on specialized forms of violence (e.g., sexual violence), which may have different risk factors than general violence. Third, most studies have not used “gold-standard” measures of risk factors, but rather single items or scales that appear on such risk assessment instruments as the LSI-R or HCR-20. Thus, the most promising dynamic risk factors must largely be culled from the larger scientific literature.

We identified promising dynamic risk factors in this literature in two stages. First, we considered a pool of leading risk factors for violence, and selected those that were malleable; that is, risk factors that theoretically could be changed with relevant treatment (Heilbrun, 1997; Kraemer et al., 1997). Second, we considered this reduced pool of malleable risk factors, and selected only those that possessed empirical evidence that they (a) related to violence and (b) changed over time. In this section, we present each hypothetical dynamic risk factor and discuss its conceptual link to violence—that is, why the risk factor may be related to violent behavior. These risk factors are displayed in Table 1.

Table 1  
*Proposed Dynamic Risk Factors*

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Impulsiveness
Negative affectivity
Anger
Negative mood
Psychosis
Antisocial attitudes
Substance use and related problems
Interpersonal relationships
Treatment alliance and adherence
Treatment and medication compliance
Treatment–provider alliance

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Although we review these factors independently, they most likely interact with one another in affecting violence. Thus, after discussing each factor's possible link to violence, we discuss theoretical, methodological, and statistical approaches that may facilitate understanding of violence as a multiply determined event.

### *Impulsiveness*

Impulsiveness is considered a strong predictor of aggression and is often targeted in violence risk reduction programs (see Webster & Jackson, 1997). There is limited empirical support for this notion. For example, in a study of more than 800 civil psychiatric patients, impulsiveness was significantly (if weakly) associated with self-reported violent thoughts (Grisso, Davis, Vesselinov, Appelbaum, & Monahan, 2000) and future violent behavior (Monahan, Steadman, et al., 2001). Similarly, Prentky, Knight, Lee, and Cerce (1995) found that “lifestyle impulsivity” distinguished recidivistic from nonrecidivistic sexual offenders. Research has shown that non-mentally disordered correctional offenders obtain higher scores on standard measures of impulsiveness than community controls, college students, psychiatric inpatients, and substance abusers (Barratt, 1994).

Impulsiveness, operationalized with the most widely used and researched measure, Barratt's Impulsiveness Scale (BIS-11; Barratt, 1994), has been characterized as a dispositional characteristic with three dimensions: motor or behavioral impulsiveness, cognitive or attentional impulsiveness, and impulsivity/non-planning (lack of concern for the future). Although impulsiveness is often regarded as a dispositional characteristic, impulsive behavior has been shown to ebb and flow over time within individuals. Indeed, impulsivity is defined as a symptom of several mental disorders (see the *Diagnostic and Statistical Manual of Mental Disorders*, 4th ed.; American Psychiatric Association, 1994). There is growing evidence that the BIS-11 taps some changeable states of impulsiveness among psychiatric patients (Swann, Anderson, Dougherty, & Moeller, 2001). For example, Corruble, Damy, and Guelfi (1999) found that 50 depressed patients' scores on the BIS-11 significantly decreased during a 4-week period of treatment.

The essential feature of impulsivity is the lack of control over affect, behavior, or cognition. It is the inability to keep composed when under pressure—internal

or external—to act. Impulsivity may lead one to respond more readily to provocation or frustration. Impulsive aggression, conceptualized by Barratt (1994), includes inadequate self-control that is necessary to refrain oneself from acting on a hair-trigger temper. Barratt has also argued that impulsive aggression is conceptually related to anger and hostility. As such, as with anger, impulsiveness clearly acts as a disinhibitor vis-à-vis violent (and other types of) behavior.

### *Negative Affect*

Negative affect may be defined as “a general dimension of subjective distress and unpleasurable engagement that subsumes a variety of aversive mood states, including anger, contempt, disgust, guilt, fear, and nervousness, with low [negative affect] being a state of calmness and serenity” (Watson, Clark, & Tellegen, 1988, p. 1063). In this section, we present anger separately from other facets of negative affect, given that it has been most heavily studied in relation to violence.

Although anger and related constructs such as hostility have been conceptualized as dispositional (Novaco, 1994), the intensity of anger and its expression can wax and wane with time, making anger potentially dynamic. Some theoretical and measurement approaches to anger recognize this variable aspect (Spielberger, 1999). Reviews of empirical studies indicate that anger is an important violence risk factor among samples of persons with mental disorder in both civil and criminal populations. On the basis of a sample of 142 civil psychiatric patients, Novaco found a moderate ( $r = .34$ ) association between anger and past violent criminality. Similarly, Kay, Wolkenfeld, and Murrill (1988) reported that anger was strongly related to physical aggression among psychiatric inpatients ( $\beta = .46$ ). On the basis of a sample of mentally disordered offenders, Menzies and Webster (1995) found that the anger-related construct of hostility was a moderately strong predictor of future inpatient violence ( $\beta = .30$ ) as well as community violence ( $\beta = .36$ ) in a sample of 655 mentally disordered criminal offenders. The related but more trait-based construct of antagonism is a relatively strong predictor of violence among psychiatric patients (Skeem et al., 2004) and of antisocial behavior among offenders (Miller & Lynam, 2003).

Two bodies of literature suggest that anger may be a dynamic or changeable risk factor. First, in a risk factor study, Hanson and Harris (2000) observed that changes in anger (increases) were related to sexual aggression. However, as noted earlier, this study relied on retrospective reports of community correctional supervisors, rendering the measure of anger somewhat suspect. Second, treatment studies suggest that anger may be malleable. Meta-analytic (R. Beck & Fernandez, 1998; Edmondson & Conger, 1996) and other reviews (Deffenbacher, Oetting, & DiGiuseppe, 2002) suggest that anger declines as a result of anger management and related treatment.

Conceptualizations of anger provide additional support for a link between anger and violence. In fact, Novaco (1994) and Spielberger (1999) incorporated interpersonal aggression directly into their theoretical models of anger. Similarly, some models of domestic violence include a subtype of batterer, with underlying dynamics of anger (Dutton, 1998; Dutton, Saunders, Starzomski, & Bartholomew, 1994; Hamberger & Hastings, 1986; Hamberger, Lohr, Bonge, & Tolin, 1996; Gottman et al., 1995; Holtzworth-Munroe & Stuart, 1994; Saunders, 1992a,

1992b). As an affective–cognitive construct, anger has been conceptualized as consisting of suspicion, rumination, hostile attitude, intensity, somatic tension, irritability, impulsive as well as aggressive reactions, and physical confrontations (Novaco, 1994). Anger likely acts both as a disinhibiting factor and as a motivating factor for violence, in that it is associated with impulsiveness, heightened arousal, and directed thoughts of hostility.

Beyond anger, negative affectivity is not often studied in relation to violence to others. However, early evidence from the NATO multinational study indicated that increases in anxiety and depressive symptoms, as measured by the Positive and Negative Syndrome Scale (PANSS; Kay, Opler, & Riszbein, 2001), were highly predictive (odds ratios = 10.5–14.9) of later community violence (Freese et al., 2002). Similarly, large-scale, longitudinal community research with adolescents age 13.5–17.5 has shown that depressed mood predicts delinquency across these ages (Beyers & Loeber, 2003). The related but more trait-based construct of neuroticism significantly predicts violence in civil psychiatric samples (Skeem, Miller, Mulvey, Tiemann, & Monahan, 2005), and is associated with anger and aggression in community samples (Caprara et al., 1996).

Mood and affect appear to be dynamic constructs, changing over both long and short intervals of time. Charles, Reynolds, and Gatz (2001) found that negative affect declined gradually over the life span in a longitudinal study of close to 3,000 community residents. Similarly, Holsen, Kraft, and Roysamb (2001) observed an association between changes (increases) in depressive symptoms over the course of years and changes in body image. Mood also changes over periods of months as seasons change, with such moderators as perceived lack of social support and low self-esteem accelerating such changes (McCarthy, Tarrier, & Gregg, 2002). In the shorter term, negative affect (Harmon-Jones, 2000) and mood (Benedict, Dobraski, & Goldstein, 1999) change over periods of weeks. Mood disturbances and depressive symptoms decrease in response to cognitive–behavioral treatments (Cruess, 2002). Although primary elements of negative affectivity (depression and anxiety) clearly possess some trait variance (Watson, 1999), they are also changeable. Numerous treatment studies show reductions in these constructs across time for individuals who received intervention (see, generally, Gitlin, 2002; Hofmann & Tompson, 2002; Hollon, Haman, & Brown, 2002; Nathan & Gorman, 1998; Weissman & Markowitz, 2002). Individual-differences variables, such as neuroticism and extraversion (Hemenover, 2003), have been shown to moderate affect and its rate of change.

Mood and affect might relate to violent behavior for several reasons. Mood influences, and is affected by, behavior and cognition, long a cornerstone of cognitive theories of personality and intervention (A. T. Beck, Rush, Shaw, & Emory, 1979). As such, negative mood states are likely to be associated with negative cognitions about self and others. This could increase the probability of aggressive behaviors being directed to others, particularly if cognitions about others include hostile attributions (Dodge, Price, Bachorowski, & Newman, 1990; McNiel et al., 2003). Negative mood and affect can also be associated with irritability and impulsivity, again making aggressive behavior more likely to occur.

Negative mood and affect could, in principle, also give rise to other conditions that are themselves risk factors. For instance, persistent negative mood could lead

to familial or relationship problems, lack of personal support, employment problems, or stress, all of which are capable of elevating the odds of violence occurring (Douglas & Webster, 1999b; Webster et al., 1997). Finally, as with other risk factors, negative mood might be a consequence of, or proxy for, other risk factors, such as substance use, major mental illness, family discord, and antisocial personality disorder or psychopathy.

### *Psychosis*

Although there is mixed evidence on the extent to which delusions and hallucinations predict violence, we believe that there is enough evidence to support further inquiry into whether these symptoms may be dynamic risk factors. Some studies have failed to observe an association (Lidz, Mulvey, & Gardner, 1993; Monahan, Steadman, et al., 2001), whereas others have reported that these symptoms of psychosis are predictive of violence (Arango, Calcedo, Gonzalez-Salvador, & Calcedo, 1999; Bartels, Drake, Wallach, & Freeman, 1991; Cheung, Schweitzer, Crowley, & Tuckwell, 1997; Krakowski & Czobor, 1994; Link, Andrews, & Cullen, 1992; McNeil & Binder, 1994; Swanson, Borum, Swartz, & Monahan, 1996; Tanke & Yesavage, 1985). Although threat/control-override symptoms<sup>3</sup> have been posited by some to represent the key ingredient in the psychosis–violence link (Link & Stueve, 1994; Swanson et al., 1996), others have failed to replicate such findings (Appelbaum, Robbins, & Monahan, 2000). Similarly, although reviews suggest that the evidence is strongest for the association between active positive symptoms and violence (see Bjørkly, 2002a, 2002b; Monahan, 1992; Mulvey, 1994), some studies indicate that more general symptoms of psychopathology might predict violence (Arango et al., 1999; Bartels et al., 1991).

Despite debate about the link between psychosis and violence, studies consistently indicate that psychotic symptoms are dynamic. For instance, research has shown that certain scales on the PANSS can index clinically meaningful change (Cramer et al., 2001; Czobor et al., 1995). Many drug, psychosocial, and cognitive–behavioral (or some combination) treatment studies have indexed decreases in positive symptoms as a function of treatment (see, generally, Lieberman & Murray, 2001).

Why might psychotic symptoms act as risk factors, at least under certain circumstances? There are at least two possibilities. First, Buchanan et al. (1993) found that persons with delusions reported that they were most likely to act on their delusions when frightened, sad, or anxious because of their beliefs. It also is worth mentioning that people with persecutory delusions are more likely than those with other types of delusions to experience negative emotions and to act on their beliefs (Appelbaum, Robbins, & Roth, 1999). Second, the stress, frustration, and agitation often associated with aggravation of psychotic symptoms may be linked with violence. That is, the presence of psychotic symptoms could lead to violence indirectly by increasing the presence of other risk factors. Finally, when symptoms are present, it could mean that the social support and professional

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<sup>3</sup>Defined as psychotic symptoms that both remove one's sense of self-control (e.g., thought insertion) and are threatening (e.g., persecution).

supervision that often keep symptoms at bay are gone. In this way, violence might occur because of the absence of certain protective factors.

### *Antisocial Attitudes*

Antisocial or procriminal attitudes have been referred to as one of the “big four” criminogenic risk factors for offenders (Andrews & Bonta, 1994, 2003), along with criminal history, antisocial personality, and social support for crime. Meta-analytic research shows that this variable relates strongly to criminal recidivism (Gendreau, Little, & Goggin, 1996) and prison institutional misbehavior (Gendreau, Goggin, & Law, 1997). Although much relevant research has been conducted with general correctional populations, Harris, Rice, and Quinsey (1993) found a significant relation between procriminal attitudes and violent behavior in a sample of 618 mentally disordered offenders and forensic patients (50% of 191 violent recidivists evidenced procriminal attitudes vs. 29% of 427 nonrecidivists).

In addition to predicting crime and violence, there is some evidence that antisocial attitudes can change over time. The Current Criminal Thinking (CCT) scale of the Psychological Inventory of Criminal Thinking Styles (Walters, 1995) measures “current criminal attitudes and behaviors” (Walters, Trgovac, Rychlec, DiFazio, & Olson, 2002, p. 311). The scale predicts prison adjustment and outcomes and has shown significant decreases over the course of various prison-based group treatments in several samples (Walters et al., 2002). In one study, offenders who failed to show improvements on the CCT were also more likely to have disciplinary infractions (Walters et al., 2002). More generally, the large and complex literature on persuasion and attitude change demonstrates the potential malleability of attitudes (Petty, Wheeler, & Tormala, 2003). Violent fantasies or thoughts are conceptually linked with attitudes, and have been shown to predict violence in the MacArthur sample of civil patients (Grisso et al., 2000). Although there are no direct data on change, it is reasonable to expect that violent fantasies will increase or decrease in frequency or intensity as other cognitive phenomena do.

Although there is not a perfect correspondence between attitudes and behavior, it is clear that attitudes and related constructs tend to facilitate attitude-congruent behaviors (Olson & Maio, 2003). For instance, not surprisingly, men who are violent toward their romantic partners are more likely to hold attitudes that support the use of violence toward women (Saunders, 1992a, 1992b; Straus, Gelles, & Steinmetz, 1980). As such, if a person believes that violent behavior is a viable option to use in order to accrue some type of gain (e.g., money, power, respect, sex, revenge), that person is in theory more likely to use violence than a person who does not believe violence is a reasonable behavioral strategy to use.

### *Substance Use and Related Problems*

Research consistently indicates that use of alcohol and other drugs is strongly associated with violence among both mentally disordered (e.g., Monahan, Steadman, et al., 2001; Swanson, Holzer, Ganju, & Jono, 1990) and non-mentally disordered individuals (e.g., Lipsey, Wilson, Cohen, & Derzon, 1997). On the basis of an epidemiological survey of 10,000 persons living in the community,

Swanson (1994) reported that substance abuse increased the odds of violence by 10 times, even after controlling for other variables. On the basis of the MacArthur Violence Risk Assessment Study, Steadman and his colleagues (1998) found that civil psychiatric patients were no more likely to be violent than matched community residents, unless they abused substances. That is, patients who abused substances were more likely than community residents who abused substances to act violently in the community. On the basis of a study of almost all homicide offenders in northern Finland over 7 years, Eronen, Hakola, and Tiihonen (1996) reported that alcohol abuse was 10–20 times more common in homicide offenders relative to the general population. Hodgins (1992) studied the prevalence of conviction for violent crime by age 30 as a function of various disorders based on a large Swedish birth cohort. Approximately 5% of persons without mental or substance-related diagnoses had violent convictions, compared with nearly 50% of persons with substance abuse diagnoses. In short, there is compelling evidence for substance use as a robust risk factor for violent behavior.

Substance use is almost by definition dynamic. That is, intoxication and use of substances ebb and flow relatively rapidly, even among heavy users. The potentially violence-relevant effects of substance use (e.g., loss of employment, relationship problems) may change more slowly than actual substance use. Problem drinking appears to follow different trajectories of change across time from adolescence (i.e., age 13) to early adulthood (i.e., 23), including early onset use with increases over time, later onset with increases over time, and stable patterns of use (Chassin, Pitts, & Prost, 2002; see also Colder, Campbell, Ruel, Richardson, & Flay, 2002; Rose, Chassin, Presson, & Sherman, 2000).

Using a longitudinal design, Fals-Stewart (2003) demonstrated that the odds of male-to-female domestic violence, including severe violence, increased 8- to 11-fold on days that the men consumed alcohol. The relation was explained by alcohol consumption preceding violence and persisted after controlling for couple maladjustment and severity of alcohol abuse. Furthermore, the relation was strongest shortly after alcohol consumption (i.e., 0–2 hr) and became progressively weaker with time. As noted earlier, Mulvey (2004) found clear evidence that alcohol and drug use changed over time in a sample of high-risk psychiatric patients, and that use of alcohol and drugs other than marijuana were predictive of violence 2–3 days later. Thus, there is some direct evidence that substance abuse is a dynamic risk factor for violence.

There are several potential explanations for the relation between substance use and violence. First, substance use may act directly as a disinhibiting agent, making many types of behaviors, including aggressive ones, more likely. Second, substance use may affect violence indirectly through its association with instability in such major life domains as housing, employment, health, and social as well as familial relationships. The disruption of the latter domains may elevate the odds for violence. Third, substance use may be involved indirectly with violence, as aggression may be a mechanism for enforcing transactions of illicit drugs. Fourth, violence may occur through the frustration experienced when a person's attempt to obtain or use substances is thwarted. Quelling the craving and desire associated with using various substances is a strong motivator, and hence a person may be more likely to act aggressively when they are prevented from acquiring substances. Finally, substance use may be a mere correlate of violence—associ-

ated statistically through the operation of some third factor. For example, people who live in disadvantaged neighborhoods are more likely than others to abuse substances and to be violent, as are people with certain psychiatric disorders such as antisocial personality disorder or schizophrenia. It is possible that contextual or individual features cause substance use and violence.

### *Interpersonal Relationships*

The quality of individuals' relationships influences aggression, and is likely to wax and wane over time. Relationships may be conceptualized as proximate risk factors for violence or more general protective factors. First, individuals are often violent toward those with whom they have relationships, including friends and family members (e.g., Monahan, Steadman, et al., 2001). In a sample of severely mentally ill persons, Estroff and Zimmer (1994) reported that patients who felt threatened by or perceived hostility among friends and relatives were more likely to threaten violence toward others. Similarly, the quality of interpersonal relationships is associated with domestic violence and victimization (e.g., Bookwala, Frieze, & Grote, 1994).

Second, social support, or the degree of material and/or emotional support provided by a group of others, may be viewed as a protective factor. In a sample of outpatients with schizophrenia, Bartels et al. (1991) reported that violence was associated with difficulties in several areas of social functioning related to an absence of support (housing, financing, meals, daily activities). In a series of studies of persons with severe mental disorder, Klassen and O'Connor (1988a, 1988b, 1988c, 1989) found that lack of support from family members (feeling let down or dissatisfied with family, high levels of arguments with family) predicted violence. Few social support resources have predicted domestic violence in large-scale, longitudinal epidemiological studies as well (Magdol et al., 1997). A low sense of belonging has been reported to predict (partner) violence (Rankin, Saunders, & Williams, 2000). Social support was reported to correlate negatively and moderately ( $-.28$  and  $-.30$ , respectively) with violence and suicide risk scales in a sample of 90 psychiatric patients (Kotler et al., 1993). Even among some criminal groups (in this case, sexual offenders), those who have displayed more violence were reported to have less perceived social support (Gutierrez-Lobos, Schmid-Siegal, Bankier, & Walter, 2001).

As suggested by this brief review, there are numerous ways to conceptualize social support (i.e., perceived support, received support, size of social network) and relationship quality (i.e., stability, conflict). Studies touching on a variety of such issues provide support for the notion that this factor is dynamic. For instance, longitudinal research on 767 adolescents has shown that social support, stress, and distress change over time in a transactional fashion (Torsheim, Aaroe, & Wold, 2003). Emotional support and network size both have been shown to change (Hong, Seltzer, & Krauss, 2001). McCall, Reboussin, and Rapp (2001) reported that positive social interaction and emotional/informational support changed for the better among a sample of persons with mental disorder after they received treatment for depression. Material support and daily stressors have been shown to change and relate to changes in psychosocial stress (Wong & Piliavin, 2001). The various components of this domain may affect one another. For instance, there is

evidence that changes in social networks cause changes in dyadic relationships (Sprecher, Felmlee, Orbuch, & Willetts, 2002).

This construct may relate to violence for a variety of reasons. For instance, a troubled relationship marked by frequent arguments and hostility may occasionally escalate into direct physical violence. Alternatively, lack of support in relationships may be linked indirectly with violence through an increase in stress, psychiatric symptoms, or substance use. Alternatively, even static factors such as psychopathy could explain poor social support (in which little is sought or "needed") and elevated violence potential. Few studies, unfortunately, attend to such third-variable explanations.

Estroff and Zimmer (1994) found that the relation between social support or networks and violence is likely to be complex. On a global level, features of social networks could act either to increase or to decrease the risk of violence. For instance, living at home with the ostensible tangible support of family members could actually serve to elevate risk for violence if a person has a conflictual and stressful relationship with another person living there. On the other hand, this situation could decrease the odds of violence if there is no such conflict present. For this reason, it is critically important for this domain that the various types of social support are attended to, that much more than the size of a persons' network is likely to be important, and that conflicts and stresses within existing relationships are clearly understood.

### *Treatment Adherence and Alliance*

Poor treatment involvement and medication noncompliance have been shown to predict future violence among psychiatric patients (e.g., Monahan, Steadman, et al., 2001; Schwartz et al., 1998). Estroff and Zimmer (1994) reported that when the social networks of psychiatric patients consisted of fewer mental health professionals, violence was more likely to ensue. Medication noncompliance has been reported as a strong predictor of return to psychiatric hospitals (Haywood et al., 1994) and violence (Bartels et al., 1991). More broadly, Bartels and colleagues found that patients with schizophrenia who behaved violently had difficulties in several basic social areas, including psychosocial treatment adherence, medication compliance, and treatment alliance.

Although ongoing patterns of change in such variables have not been well characterized, people clearly miss treatment appointments and vary in their medication compliance over time. Research on the treatment alliance, treatment attendance, and medication noncompliance is illustrative. Several studies indicate that the treatment alliance, or relationship quality between client and provider, increases and decreases over time (Barber, Morse, Krakauer, Chittams, & Crits-Christoph, 1997; Horvath, 1995; Kivlighan & Shaughnessy, 2000; Safran, Greenberg, & Rice, 1988). Some of these changes may be described as alliance rupture and repair or as the disturbance of alliance followed by its subsequent improvement (Bordin, 1994). Perhaps based partially on alliance ruptures, patients and prisoners often "drop out" of treatment. Similarly, periodic or permanent medication noncompliance is a ubiquitous concern among mental health professionals, given its frequency. Svedberg, Mesterton, and Cullberg (2001) reported that approximately one third of patients with nonaffective psychosis were noncom-

ppliant with neuroleptic medication on at least one occasion over 5 years (see also Duncan & Rogers, 1998; Olfson et al., 2000). Some of these episodes of medication noncompliance may relate to poor treatment alliances (Olfson et al., 2000), suggesting that this domain is complex, with potential interactions among predictors.

As with other factors, the reasons for a connection between violence and this risk factor domain may be direct or indirect. First, treatment involvement and medication compliance may be viewed as protective factors for violence. That is, without adequate treatment, risk factors associated with mental illness (i.e., symptoms) or with life more generally (i.e., stress) are likely to lead to violence. Second, treatment involvement and medication compliance may simply be “markers” for individuals with problematic characteristics (e.g., antagonism, impulsivity, antisocial attitudes) that predict violence, regardless of the influence of treatment. For instance, substance abuse is related to both medication noncompliance (Owen, Fischer, Booth, & Cuffel, 1996) and violence. For these reasons, prospective research that attempts to disentangle the effects of traits and states of interest is necessary. Such research could determine, for instance, the sequence of events regarding poor treatment alliance, medication noncompliance, and psychiatric symptoms that appeared to culminate in a violent incident.

## Theory and Research

### *Recommendations for Theory*

Over the past 2 decades, the field has made great empirical strides in identifying risk factors for violence and developing structured risk assessment tools (Monahan, Steadman, et al., 2001; Quinsey et al., 1998; Webster et al., 1997). Clinicians' ability to identify individuals at risk has never been better. Despite this, the science of risk assessment currently lags far behind practice. Recognizing that clinicians typically assess risk in order to intervene, the field has made a dramatic conceptual shift from a pure predictionist perspective on risk assessment to a violence management perspective (Dvoskin & Heilbrun, 2001; Hart, 1998; Heilbrun, 1997). However, researchers have yet to identify which risk factors for violence are modifiable and how to assess them on an ongoing basis. Accomplishing this empirical task is necessary to inform violence management.

To move the field forward on this task, clinicians' purpose is twofold: (a) to explicate the risk management model in terms of the construct of risk state (vs. status) and (b) to select carefully and describe promising dynamic risk factors for researchers to focus on in the next generation of risk assessment and intervention research. In our view, the most profitable direction that risk research can take is toward treatment-related (violence reduction) studies. In this final section, we provide some theoretical and research suggestions that might help investigators move in this direction. We realize that, with the exception of substance abuse, few firm conclusions can be drawn about the actual effects on violence of the hypothetical dynamic risk factors we have proposed. No conclusions can be reached about potential interactions among these factors over time. This largely reflects the near-void when it comes to empirical work that follows a truly dynamic (i.e., multiple time point) design. To move toward filling this void, we first discuss the importance of theory in formulating testable models of dynamic

risk. We then recommend a general line of empirical pursuit that may start to disentangle the independent, indirect, interactive, or transactional effects of dynamic risk factors on violence.

### *The Necessity of Theory*

Unfortunately, theory has played a minor role in extant risk assessment research (for an exception, see the LSI-R's [Andrews & Bonta, 1995] reliance on social learning theory). We agree with Monahan and Steadman (1994) that there are no general theories of violence with compelling support when it comes to explaining violence among adults with mental disorder. Rather than individually studying risk factors with conceptual bridges to violence, we recommend developing theoretical models that integrate the roles that diverse dynamic risk factors might play vis-à-vis proximal violence. Studying single risk factors (e.g., substance use) risks "missing the story" on dynamic risk by neglecting interconnected factors and their influence over time (e.g., the role of anger, family relationships, or both on substance use and on violence). The reality is that violence is a multiply determined and transactional behavior.

A full exposition of a theoretical framework for violence among persons with mental disorder, personality disorder, or substance-related problems is beyond the scope of the current article. Here, we provide two recommendations for such a framework and outline several promising avenues (for a fuller account, see Skeem & Douglas, 2004). Our first recommendation is that a theoretical framework for proximal violence provides for relational complexities. Science has shown clinicians that the relations among risk factors and violence can be direct or indirect (mediated), unidirectional or bidirectional, or interactive (moderated). The nature of change in risk factors must be factored in as well, and this change can be linear or nonlinear (and nonlinear change can be quadratic, cubic, exponential, etc.). Rarely will a simple A-causes-B, no-strings-attached statement suffice to explain the relation between a risk factor and violence or even between a risk factor and some other risk factor. Second, we recommend that a theoretical framework explicitly include features that directly inform the development of strategies to reduce violence among high-risk populations.

Criminological and psychological theories of violence provide promising leads for the development of a theoretical framework for risk state. In our view, most criminological theories do not pay due attention to the role of mental disorder and psychosocial dysfunction in violence, and do not sufficiently attend to the fluid nature of risk factors. At the same time, most psychological theories of violence are not adequately informed by advances in criminological theory. It seems that a compelling theoretical framework would integrate aspects of both schools of thought, and should directly incorporate postulates that address change mechanisms.

A promising psychological approach would be to draw from Diathesis–Stress (DS; Bronfenbrenner, 1979; Monroe & Simons, 1991) and State–Trait (ST; Jackson & Sher, 2003) models of psychopathological development and progression, as well as from integrative (see Elliot, Huizinga, & Ageton, 1985) and interactional (see Thornberry & Krohn, 1997) theories of crime. Within a DS framework, one would be interested in specifying the diatheses (i.e., mental

disorder, personality features, temperament, attitudes, learned beliefs, or some combination thereof) or predisposing factors for violence, as well as the more episodic stresses that could exacerbate dynamic risk factors and raise the risk for violence. The ST model of psychopathology—which is most relevant for conditions that include both a chronic component and an episodic component that fluctuates over time—is well suited for describing (if not explaining) hypothesized dynamic risk factors like psychiatric symptoms, personality traits, and substance disorders.

Recent advances in criminological theory from the integrated theory and the interactive theory could be used to build upon these psychological models. The integrated theory directs attention to empirically validated traditional theories of crime and the constructs that these theories posit as fundamental to the development of antisocial behavior (e.g., deviant peer networks, chaotic neighborhoods). These constructs could be modeled as historical factors in an overall theoretical framework of dynamic risk. The interactive theory extends the integrative theory by specifying that causal pathways to criminal behavior are defined by reciprocal or transactional relations between risk factors, and is consistent with ST models of psychosocial dysfunction. This brief discussion of theory is intended to provide direction for the development of a theoretical framework(s). The theory would inform the investigator's choice of research design and analytic approach. We discuss these issues next.

### *Recommendations for Future Research*

*Design considerations.* In terms of research design, we first refer readers to our earlier section on the complexities of risk state. That is, certain fundamental principles apply in terms of discerning how a risk factor is related to violence. Researchers will be interested in determining (a) which risk factors precede others in terms of onset or change and which precede violence, (b) whether risk factors are associated with one another, and (c) whether certain dynamic risk factors most strongly predict violence alone or in interaction with one another.

In addition, we suggest that there are several other important research design features that will be necessary to provide a clearer picture of the influence of dynamic risk factors on violence. These recommendations also follow from the main principles of the theoretical section presented earlier. In addition to the basic necessities of prospective design and multiple measurements, studies should enable testing of

1. a variety of potential trajectories that risk factors may follow so as to capture, as accurately as possible, the “true” change in risk factors over time;
2. both stable and time-specific components of a construct;
3. mediational effects of one variable on another (i.e., Does a third variable explain why two others are related?);
4. moderating effects of variables (i.e., Does the relation between two

variables change as a function of a third variable, such as having differential strength across gender?);

5. incremental predictive improvement of dynamic risk factors beyond static or historical ones, as well as potential interactions between static and dynamic factors;
6. interactions between risk factors (i.e., Do changes in substance use and symptoms of mental illness interact to increase the risk of violence?); and
7. unidirectional and bidirectional effects of risk factors on one another and on violence.

Bidirectional effects are sometimes referred to as *reciprocal* or *transactional effects*, and essentially mean that two constructs influence one another as time passes (symptoms cause substance use, which in turn worsens symptoms, which in turn further increases substance use).

*Analytic approaches.* Although it is beyond the scope of this article to thoroughly discuss statistical techniques that can accommodate these design features, we simply mention some here (though see Douglas & Skeem, 2004, for illustrations). The two main families of analytic approaches that can address most, if not all, of the previously mentioned design features are hierarchical linear modeling (HLM; Raudenbush & Bryk, 2001) and latent trajectory modeling (LTM; Muthén & Curren, 1997; sometimes also called “latent curve or growth modeling” or “structural equation modeling”). Although differing in their approach, both HLM and LTM permit the estimation of trajectory or change patterns of variables and help determine whether these change patterns are related to one another (i.e., Do increases in anger lead to increases in violence?). Both permit the modeling of intraindividual change, rather than interindividual change that can cancel out at the group level. Finally, each allows for the testing of interactional effects, transactional effects, and so forth.

A downside of each approach is the assumption that a single trajectory best fits the entire sample (i.e., that anger increases in a linear fashion over time for all persons in a sample) and that people vary normally about this common trajectory. This assumption may not always be tenable, however, when studying violence and mental illness (two constructs that are inherently divergent across people), in that there may very well be different groups of people each with differing trajectories (i.e., Group A’s symptoms may get worse over time; Group B’s may not change; and Group C’s may start low, get worse, and then level off or decrease). Nagin (1999) introduced an approach (called “group-based semiparametric mixture modeling”) to permit the modeling of different trajectories in subgroups of a given sample, and has applied it profitably to questions of adolescent criminal behavior (Nagin & Tremblay, 1999, 2001).

*Research challenges.* There are a number of practical challenges to this line of research. First, it is not clear how often various risk factors must be measured in order to capture their true rate or nature of change. Short of near-continuous monitoring of the level that the risk factor takes, most time intervals will risk missing fluctuations that occur in between assessments. The longer the interval between assessments, the greater the risk that changes will be missed. If changes

are missed, the validity of measurement is threatened. Indeed, we consider determining the optimal interval of measurement for various risk factors to be one of the challenges that lays ahead for researchers.

Second, it will be near impossible ever to specify with confidence that Risk Factor A truly preceded Risk Factor B or even the outcome of interest. Any measurement procedure must naturally have a starting point, and anything that precedes the starting point is not measurable in a prospective sense. Hence, it is possible that Risk Factor A might precede Risk Factor B in the period of measurement, but that it also was preceded by Risk Factor B (or Risk Factor C or Risk Factor D) prior to the commencement of measurement. It is even possible that the outcome of interest (here, violence) preceded the measurement period and led to changes in risk factors (i.e., a person has a fight, which increases his or her paranoia, and hence substance ingestion frequency, or leads to a deterioration of quality of relationships). From a theoretical perspective, this is important in terms of delineating the causal chain of events and testing theoretical postulates. From a practical perspective, however, it may be less important if researchers are still able to conclude that changes in Risk Factor A led to an increased probability of violence (regardless of what distal factors might have led to changes in Risk Factor A in the first place).

*Meeting challenges.* In terms of putting such a line of research into effect, one of the first steps in operationalizing the emerging risk management model of risk assessment is to conduct rigorous research on the nature of change in putatively dynamic risk factors. That is, the field needs to identify, first, what important risk factors are dynamic. We have suggested a variety of risk factors based on relatively well-defined criteria (evidence of sensitivity to change, evidence of risk factor status). However, our suggestions are tentative because the samples in which data supported the dynamic nature of a construct tended not to be to the same as the samples that showed that the construct was related to violence.

What is needed is prospective, repeated-measures studies of hypothetically dynamic risk factors, such as those proposed herein, with enough observations to discern patterns or trajectories of change (e.g., linear, curvilinear), as well as rapidity of change. This would have to be coupled with frequent measurement of violent behavior, which would permit analysis of whether the constructs are both dynamic and have risk factor status, as well as the precise nature of change and relation of this change to violence.

Furthermore, in addition to the foregoing, researchers should aim to understand (a) generalizability of the dynamic nature of risk factors across assessment settings, populations, and diagnostic subgroups (e.g., perhaps certain risk factors change more among psychiatric patients compared with offender populations); (b) responsiveness of dynamic risk factors to existing interventions; and (c) whether gender, race, age, or other important individual characteristics influence the nature, course, or predictive utility of dynamic risk factors.

The second primary task for researchers is to be able to integrate knowledge about dynamic risk factors into risk assessment/management tools that help to (a) identify areas of risk for a person as a function of static and dynamic risk factors and (b) facilitate the application of concomitant risk reduction strategies that are tied to the relevant risk factors. As the field currently is, there are few relatively

well-established risk assessment instruments that are relevant to the concept of dynamic risk (for examples, see LSI-R and HCR-20). There are several others that were developed more recently with the measurement of change in their dynamic risk factors as part of the primary assessment task (SORM and VRS). We encourage the continuation of such efforts, particularly once the most promising dynamic risk factors have been identified and studied across contexts. Accomplishing these tasks will facilitate the field's movement toward empirically supported treatments for reducing violence.

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