

# Using a Five-Factor Lens to Explore the Relation Between Personality Traits and Violence in Psychiatric Patients

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Recent work suggests that predictors of violence are similar for individuals with and without mental illness. Although psychopathy is among the most potent of such predictors, the nature of its relation to violence is unclear. On the basis of a sample of 769 civil psychiatric patients, the authors explore the possibility that measures of psychopathy provide a glimpse of higher order personality traits that predispose individuals toward violence. Results indicate that general traits captured by a measure of the 5-factor model, particularly antagonism, were relatively strongly associated with violence and shared most of their violence-relevant variance with a leading measure of psychopathy. Because interpersonal and affective features of psychopathy are less important than basic traits of antagonism in postdicting violence, it may be appropriate to broaden focus in risk assessment to patients' basic personality traits.

*Keywords:* mental illness, violence, personality, psychopathy

Over the past decade, there have been striking advances in understanding and assessing violence potential among individuals with mental illness. Multiple studies have followed individuals with mental illness into the community to document their life situations and involvement in violent incidents in more detail than ever before (e.g., Lidz, Mulvey, & Gardner, 1993; Monahan et al., 2001; Schubert, Mulvey, Lidz, Gardner, & Skeem, in press; Swartz et al., 1998). Moreover, several groups of researchers have developed and tested structured clinical judgment guides and actuarial tools for assessing violence potential among individuals with mental illness (Banks et al., 2004; Quinsey, Harris, Rice, & Cormier, 1998; Webster, Douglas, Eaves, & Hart, 1997). This work has better defined the potential and limits of clinical judgment, informed proposed policy approaches, and provided a clearer picture of the precipitants of violent incidents involving individuals with mental illness.

An emergent theme in this recent work is that personality factors play a powerful role in violence among individuals with mental

illness. A dominant assumption among practitioners, policymakers, and the public is that violence among individuals with mental illness is chiefly attributable to major mental disorders like psychosis (e.g., Link, Phelan, Bresnahan, Stueve, & Pescosolido, 1999; Wahl, 1995). Nevertheless, some evidence suggests that the strongest predictors of violence (e.g., demographic characteristics, socioeconomic status, past violence) are similar for those with and without mental illnesses (Bonta, Law, & Hanson, 1998). Several large-scale investigations, for instance, have shown that substance abuse (Lidz et al., 1993; Monahan et al., 2001; Swanson, Holzer, Ganju, & Jono, 1990) and personality factors (Harris & Rice, 1997; Moran et al., 2003; Skeem & Mulvey, 2001; Tardiff, Marzuk, Leon, & Portera, 1997) are relatively powerful predictors of community violence involving those with mental illness. In contrast, such psychiatric symptoms as delusional beliefs are relatively weak or inconsistent predictors (Appelbaum, Robbins, & Monahan, 2000; Lidz et al., 1993; Link & Stueve, 1994). In one comparison of the relative power of several types of risk factors, Douglas, Ogloff, Nicholls, and Grant (1999) found that historical (e.g., psychopathy, substance abuse) and dynamic (e.g., stress, lack of supports) factors were substantially more powerful in predicting psychiatric patients' physical violence than were clinical factors (e.g., active symptoms of major mental disorder). All of this is not to say that mental illness is not a modest risk factor for violence (see Mulvey, 1994), but that the most powerful predictors of violence are similar for those with and without mental illness.

Evidence for the predictive power of psychopathic personality disorder, as operationalized by the Psychopathy Checklist—Revised (PCL—R; Hare, 1991) or Screening Version (PCL:SV; Hart, Cox, & Hare, 1995), has been building considerable momentum. Psychopathy, as assessed by these widely used measures, is generally considered to have an unparalleled ability to predict future

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violence among offenders with and without mental illness (e.g., Harris, Rice, & Quinsey, 1993; Heilbrun et al., 1998; Hill, Rogers, & Bickford, 1995; Rice & Harris, 1995; Salekin, Rogers, & Sewell, 1996; Strand, Belfrage, Fransson, & Levander, 1999). Recently, it has become clear that this finding may generalize to civil psychiatric patients. Specifically, traits of psychopathy have been found to differentiate between highly select groups of psychotic patients with and without histories of persistent violent behavior (Nolan, Volavka, Mohr, & Czobor, 1999) and to predict violent incidents in the community by involuntarily committed psychiatric patients following discharge (Douglas et al., 1999). Indeed, psychopathy was the strongest independent predictor of violence among a vast array of 134 contenders assessed in the comprehensive MacArthur Violence Risk Assessment Study (RAS; Monahan et al., 2001; Skeem & Mulvey, 2001).

However, important issues remain to be resolved about the nature of the relation between scores on measures of psychopathy and violence in civil psychiatric samples. One possibility is that the measures assess aspects of a specific personality disorder that is marked by emotional detachment and includes violence as an intrinsic component (e.g., psychopaths callously use violence to achieve control over and exploit others). Another possibility is that the measures provide a consistent, reliable method for tapping a range of key personality features (e.g., impulsivity, hostility). Although these features are not necessarily pathological, if found sufficiently pronounced in an individual, they put him or her at high risk for involvement in violent situations. In essence, extant research suggests that higher scores on the PCL measures increase the likelihood of involvement in violence. It is unclear, however, the extent to which these higher scores are indicative of a specific personality disorder or some personality traits that generally predispose individuals to violent encounters.

There is preliminary evidence for the latter possibility (Skeem & Mulvey, 2001; Skeem, Mulvey, & Grisso, 2003). In this study, we further explore the idea that scores on the PCL measures may be a window into the presence of general personality traits that predispose an individual toward violent situations or relationships. In this study, we assess the relations among PCL:SV psychopathy, general personality traits included in the five-factor model (FFM; McCrae & Costa, 1990), and violence in the community. On the basis of a large sample of civil psychiatric patients, we determined whether and how the violence-relevant variance of these measures overlapped. This study is an initial attempt to unpack the meaning of the observed relationship between PCL:SV scores and violence among psychiatric patients by referencing general personality constructs that rarely have been addressed in this context.

### Psychopathy and Violence: Nature of the Relationship

The current study extends our prior work (Skeem et al., 2003; Skeem & Mulvey, 2001), which suggested that the predictive power of the PCL:SV may be less a function of the measure's assessment of primary psychopathy than its ability to distill general traits associated with impulsive, irresponsible, and hostile behavior. This became apparent only when the dimensions that underlie PCL:SV total scores were examined systematically. Although several multidimensional models for the PCL measures have been proposed (Cooke & Michie, 2001; Hare, 2003), the PCL:SV was built on a two-factor model (Hare, 1991; Hart et al.,

1995) and consists of two correlated scales. Factor 1 emphasizes the interpersonal and affective traits (e.g., grandiosity, callousness) that are central to classic conceptions of primary psychopathy (Cleckley, 1941), whereas Factor 2 emphasizes socially deviant behavior (e.g., impulsivity, poor behavior controls) that is consistent with recent diagnostic criteria for antisocial personality disorder (Lilienfeld, 1998). Factor 1 may be viewed as the selfish, callous, and remorseless use of others, and Factor 2 may be viewed as a chronically unstable and antisocial lifestyle (Harpur, Hare, & Hakstian, 1989; Hart et al., 1995). Notably, Hare (2003) recently subdivided Factors 1 and 2 to create four PCL-R subscales.

To the surprise of some, psychopathy demonstrated relatively strong predictive power for violence in the RAS (Monahan et al., 2001). In this large sample of psychiatric inpatients, some may have expected Axis I symptomatology to carry more weight than personality traits, particularly given the low base rate of psychopathy in nonoffender samples. Given this finding, Skeem and Mulvey (2001) examined the relation between specific PCL:SV factors and violence in this sample. They found that the lion's share of the PCL:SV's power in predicting violence was attributable to Factor 2, even when an array of covariates, including past antisocial behavior, were statistically controlled. It was also found that Factor 2 tapped personality traits that were more strongly associated with violence (and past antisocial behavior) than Factor 1, keeping with past research on other populations (Harpur et al., 1989; Hemphill & Hare, 1999; Rogers, 1995; Salekin et al., 1996; Walters, 2003). Thus, the violence-predictive personality traits assessed by the PCL:SV in this study did not appear to be the interpersonal and affective features of psychopathy but were perhaps a higher order personality construct associated with impulsive, hostile behavior.

In subsequent work, Skeem et al. (2003) found that a three-factor model of psychopathy in which half of the former Factor 2 items were dropped fit the MacArthur data better than the original two-factor model. This three-factor model, developed by Cooke and Michie (2001), subdivided the former Factor 1 into separate facets that represent an arrogant and deceitful interpersonal style and deficient affective experience and eliminated several former Factor 2 items to create a facet of impulsive and irresponsible behavioral style. The latter items were eliminated from Factor 2 because they were found to be poor indicators of the psychopathy construct. However, these items (poor behavior controls, adolescent antisocial behavior, adult antisocial behavior) were those that best predicted violence. Thus, Skeem et al. (2003) argued that future research should explore the nature of any higher order personality construct that these items were tapping (both alone and as the original Factor 2). By *higher order*, we meant broad traits supported by extensively studied descriptive models of normal personality. Psychopathy may be understood as a specific composite of several such higher order personality dimensions.

### The FFM: Unpacking the Relationship

The FFM of personality (McCrae & Costa, 1990) provides a promising vehicle for exploring such potentially violent predictive personality constructs. A number of personality factors that have been used to predict and explain violent behavior, from psychopathy to general low self-control (Gottfredson & Hirschi, 1990), may be understood as variants of normal personality and repre-

sented by the FFM's well-validated structural model. Several scholars have provided data-based arguments that the FFM's basic personality dimensions lend conceptual clarity and clinical utility to understanding and assessing both patients' personality disorders in general (Costa & Widiger, 2002; Lynam & Widiger, 2001; Widiger & Frances, 2002) and psychopathy per se (Lynam, 2002; Miller, Lynam, Widiger, & Leukefeld, 2001; Widiger & Lynam, 1998). Although the model's development, its atheoretical basis, and its ability to capture the full range of personality have been cogently criticized (e.g., Block, 1995, 2001), the FFM provides a common language that fits our goal of describing broad personality dimensions that may be strongly associated with violent behavior.

The FFM posits that personality is structured by five broad domains, including neuroticism, extraversion, openness to experience, agreeableness (vs. antagonism), and conscientiousness. The dominant measurement approach assumes that each of these domains subsumes six specific traits or facets. For example, the domain of agreeableness is thought to include the facets of trust, straightforwardness, altruism, compliance, modesty, and tender mindedness. A wealth of data, based mostly on factor analyses of trait descriptors and personality inventories (for a review, see John, Angleitner, & Ostendorf's, 1988, study), is consistent with this basic five-factor personality structure. These dimensions have been found to generalize to a variety of cultures, including German, Portuguese, Israeli, Chinese, and Japanese (McCrae & Costa, 1997).

### FFM and Psychopathy

There have been several theoretical and empirical examinations of the link between the FFM and psychopathy. Although several FFM domains have been linked with psychopathy, low agreeableness—also known as antagonism—is perhaps the most robust of these. First, Lynam's translation (Lynam, 2002; Widiger & Lynam, 1998) of the PCL-R into FFM terms has been tested in two empirical studies. In these studies, a FFM prototype of psychopathy was developed on the basis of expert consensus ratings (Miller et al., 2001) and then compared with individuals' Neuroticism Extroversion Openness–Personality Inventory–Revised (NEO-PI-R; Costa & McCrae, 1992) profiles. The expert-based FFM psychopathy profile consisted of very high antagonism, low conscientiousness (specifically, low dutifulness and deliberation), high extraversion, and a mixture of high and low neuroticism (high angry hostility and impulsiveness, low anxiety, depression, self-consciousness, and vulnerability). Results from a community (Miller et al., 2001) and college sample (Miller & Lynam, 2003) suggested that this FFM representation of psychopathy relates in a theoretically coherent manner with external variables. Specifically, the FFM representation of psychopathy was positively correlated with a self-report measure of psychopathy (Levenson, Kiehl, & Fitzpatrick, 1995) and a variety of socially deviant behaviors (from age of onset for delinquency to aggression).

Despite these promising findings, our interest in the FFM relates less to its ability to capture psychopathy than in its potential for identifying related, higher order constructs that may be predictive of violence. This is particularly true of constructs that may be captured by Factor 2 of the PCL measures. According to Lynam's FFM translation of psychopathy (Lynam, 2002; Widiger & Lynam, 1998), Factor 1 of the PCL-R mainly comprises antagonism,

whereas Factor 2 comprises antagonism and low conscientiousness. The role of antagonism is believed to overlap between the factors, whereas low conscientiousness is viewed as relatively unique to Factor 2. There is mixed support for this conceptualization. In an unpublished study of 132 offenders, Knap (1999) found that PCL-R Factors 1 and 2 related both to NEO-PI-R antagonism and low conscientiousness, with Factor 2 relating more strongly to low conscientiousness than Factor 1. Similarly, Harpur, Hart, and Hare (2002) found that in small student samples, Factor 1 related most strongly with antagonism, whereas Factor 2 related to antagonism and, less substantially, low conscientiousness. However, with inmate samples, these authors found Factor 1 associated with both antagonism and low conscientiousness, whereas Factor 2 related most strongly to low conscientiousness. Together, this research suggests that Factor 2 may tap such higher order traits as antagonism and low conscientiousness, particularly low self-discipline and low deliberation (Harpur et al., 2002).

### FFM and Violence

To our knowledge, no direct, large-scale investigations of the relation between the FFM domains and violence have been published to date. Extant data consist largely of studies that analyze the relation between the FFM and self-reported aggression or antisocial behavior. On the basis of a sample of 477 Italian community residents, Caprara, Barbaranelli, and Zimbardo (1996) found that a composite variable that included self-reported physical violence was associated with both antagonism and neuroticism. Similarly, Miller, Lynam, and Leukefeld (2003) found that the neuroticism facet of angry hostility and the antagonism facets of low straightforwardness and low compliance were important postdictors of self-reported aggression.

In a recent meta-analysis, Miller and Lynam (2003) examined the relations between the FFM and antisocial behavior across a broad array of samples (children, adolescents, and adults) and contexts (community samples, outpatient psychiatric patients, juvenile delinquents, and prisoners). The authors used an inclusive definition of antisocial behavior (from parent reports of delinquency to subscale scores on self-report personality tests). The results suggested that the dimensions of antagonism ( $r = .37$ ) and low conscientiousness ( $r = .25$ ) were most strongly associated with antisocial behavior.

In summary, findings with samples that included offenders suggest the importance of antagonism and low conscientiousness for antisocial and aggressive behavior. These two scales, in turn, are associated with the PCL measures (particularly Factor 2). In nonoffender samples, neuroticism is also found to play a role in aggressive behavior. Together, these results suggest that the FFM may help to capture an antagonistic, careless, and perhaps emotionally unstable interpersonal style that is associated with violence. This study explores this hypothesis in a sample of clinical interest.

### This Study: Psychopathy, the FFM, and Violence

As suggested earlier, the general goal of this study is to determine which aspects of personality are maximally related to violence among civil psychiatric patients. Our aims were to (a) test the FFM's overall relationship with violence, (b) assess the overlap

between traits captured by the FFM and PCL:SV, and (c) determine the incremental statistical utility of the FFM over the PCL:SV (and vice versa) for modeling the relationship with violence.

A fundamental problem in studying the link between personality constructs and future behavior involves the inevitable overlap between traits and past behavior. One moves from behavioral acts to personality dispositions through a process of inference, that is, latent trait constructs are inferred on the basis of observable behavioral cues (overt and covert) and the context in which they occur (Ajzen, 1988). This overlap is visible in most personality measures (e.g., the NEO-Five-Factor Inventory [NEO-FFI]), which include items that reference both overt behavior (e.g., frequent fights) and covert behavior (e.g., tendencies to mistrust others).

The fact that past behavior (e.g., hitting one's spouse) strongly predicts similar future behavior complicates our investigation of the predictive power of inferred personality traits, whether they are psychopathy, low self-control, or antagonism. Measures of these constructs often overlap with the criterion they are meant to predict, which increases their predictive utility without enhancing their conceptual contribution. Thus, in this study, we attempt to emphasize personality constructs over lower order behavioral acts by statistically controlling for indices of past violent and antisocial behavior. Although we realize that this distinction between behavior and personality is somewhat arbitrary, given the lack of bright line between habits and traits, we make the distinction in an effort to assess the utility of the latent traits of interest. Because some of the covariates included in the analyses described below (e.g., indices of criminal history) may lie causally downstream from the traits of interest, controlling for their effects may amount to suppressing statistically some of the very variance of the trait itself (see Meehl's, 1971, study). Thus, our approach is conservative.

## Method

### Participants

The data analyzed in this study were collected as part of the RAS (available at <http://macarthur.virginia.edu>). The methodological details and primary results of the larger study (Monahan et al., 2001) and those pertaining to psychopathy (Skeem & Mulvey, 2001) are reported elsewhere. Eligible participants were sampled according to age, gender, and ethnicity from acute inpatient facilities at three sites (Pittsburgh, Pennsylvania; Kansas City, Missouri; and Worcester, Massachusetts) to maintain a consistent distribution of these characteristics across sites. Study inclusion criteria were as follows: (a) civil admission; (b) between the ages of 18 and 40 years; (c) English-speaking; (d) White or African American ethnicity (or Hispanic in Worcester only); and (e) a medical record diagnosis of schizophrenia, schizophreniform disorder, schizoaffective disorder, depression, dysthymia, mania, brief reactive psychosis, delusional disorder, alcohol or other drug abuse or dependence, or personality disorder. Research interviewers invited a quota sample of 1,695 patients to participate. The refusal rate was 29% ( $N = 492$ ; see Steadman et al.'s, 1998, study for analyses related to sample recruitment and retention). The final sample size of patients who were interviewed in a hospital was 1,136. Their demographic and psychiatric characteristics are described in Steadman et al.'s (1998) study.

The bulk of analyses reported in this article are based on a sample of 769 patients who completed the NEO-FFI. These patients were young ( $M = 30$  years,  $SD = 6$ ) individuals who predominately were voluntarily admitted

(68%). Of the participants (56% men, 44% women), 70% were White, 27% were African American, and 3% were Hispanic. These patients had independently determined diagnoses of depression (40%), schizophrenia (18%), bipolar disorder (16%), other psychotic disorder (4%), alcohol abuse or dependence (44%), other drug abuse or dependence (35%), or personality disorder only (2%). Some 41% of patients had a co-occurring major mental disorder (i.e., schizophrenia, schizophreniform, schizoaffective, depression, dysthymia, mania, cyclothymia, and other psychotic disorders) and a substance abuse or dependence disorder. Relative to the larger sample from which it was drawn, the present sample was somewhat less likely to contain men (65% vs. 56%, respectively),  $\chi^2(1, N = 1,136) = 9.98, p = .002$ , and to receive diagnoses of alcohol abuse or dependence (52% vs. 44%, respectively),  $\chi^2(1, N = 1,136) = 6.52, p = .011$ . There were, however, no significant differences between the present sample and the larger sample with respect to age, race, and most diagnoses (e.g., depression, schizophrenia, bipolar disorder, other psychotic disorder, drug abuse or drug dependence, and comorbid mental and substance abuse disorders). The most likely source of difference between the present and larger samples is attrition from the larger study. To reduce the bias inherent in assessing personality traits during periods of acute Axis I illness, participants completed the NEO-FFI during follow-up rather than the baseline interview (see below). Detailed analyses by Steadman et al. (1998) indicated that, although participants who agreed to participate in the larger study were presumably at greater risk for violence than those who refused, enrolled participants who completed the follow-ups were probably less likely to engage in future violence than enrolled participants who did not complete the follow-ups.

### Procedure

Patients were interviewed initially in the hospital by a research interviewer to obtain data on demographic and historical factors and by a research clinician (with a doctoral or master's degree) to confirm the medical record diagnosis using the *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed., rev.; American Psychiatric Association, 1987) checklist (Janca & Helzer, 1990) and to administer several clinical scales. After patients were discharged, research interviewers recontacted them in the community and interviewed them 5 times (every 10 weeks) during a 1-year period to obtain information about a range of factors, including the patients' involvement in violence. A collateral informant (e.g., family member, friend, professional) for each patient was also interviewed on the same schedule. Patients and collateral informants were paid for their participation. In addition to patient and collateral interviews, official records were used as a source of information. Hospital records were reviewed to assist in the completion of several scales, and arrest records were reviewed to provide information about offense histories and arrests that occurred during the follow-up period.

To reduce the difficulties inherent in validly measuring personality characteristics during the acute phases of an Axis I disorder (see Loranger et al.'s, 1991, study), we administered the PCL:SV and NEO-FFI during the follow-up period. Typically, the PCL:SV was administered during Follow-Ups 1 or 2, and the NEO-FFI was administered during Follow-Ups 4 or 5. Because most of the violence in this study occurred during Follow-Ups 1 and 2 (Monahan et al., 2001), this technically is a study of the ability of the PCL:SV and NEO-FFI to postdict patients' violence. (Although some evidence suggests that the PCL:SV's predictive utility in this study is not chiefly based on its having been administered after or concomitantly with violence [Skeem et al., 2003], parallel analyses cannot be conducted for the NEO-FFI because it was administered later during the follow-up.) Thus, this study is described throughout the rest of this article as a postdictive comparison of the PCL:SV and NEO-FFI.

## Measures

**FFM.** The NEO-FFI (Costa & McCrae, 1989) was used to operationalize the FFM in this study. The NEO-FFI is a self-report scale that was developed as a 60-item short form of the NEO-PI (Costa & McCrae, 1985). Extant research suggests excellent correspondence between the NEO-FFI and NEO-PI (average scale  $r = .87$ ; Costa & McCrae, 1992). The NEO-FFI items are rated on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) to assess the five-factor domains of neuroticism, extraversion, openness to experience, antagonism (vs. agreeableness), and conscientiousness. Each domain is represented by 12 items. In the current study, an exploratory factor analysis indicated that these items loaded as expected on each of the five trait factors. Moreover, the items that composed these scales had acceptable levels of internal consistency (average  $\alpha = .77$ ). Numerous studies have documented the good internal consistency (Costa & McCrae, 1992; Miller & Lynam, 2003; Reynolds & Clark, 2001), long-term stability (for a review, see Roberts & DelVecchio's, 2000, study), and heritability (Jang, Livesley, & Vernon, 1996; Riemann, Angleitner, & Strelau, 1997) of the FFM domains. In addition, Widiger and Costa (2002) identified over 50 studies that have used the FFM to characterize maladaptive personality styles, including antisocial and psychopathic personality disorders across a variety of samples (e.g., outpatient, community, and college). Unlike its parent measure, the NEO-FFI does not include facets to describe specific subtraits of the five-factor domains.

**Psychopathy.** Psychopathy was operationalized via Hart et al.'s (1995) screening version of the PCL-R (PCL:SV). The PCL:SV specifically was designed to assess for psychopathy in noncriminal samples, given that criminal records often are unavailable or irrelevant in such settings (Cooke, Michie, Hart, & Hare, 1999). The PCL:SV is strongly associated with the PCL-R (weighted mean  $r = .80$ ), and its two scales manifest a theoretically coherent pattern of relations with other clinical variables (Hart et al., 1995). Comprehensive item response theory analyses of the PCL:SV and PCL-R suggest that the PCL:SV is an effective short form of the PCL-R (Cooke et al., 1999). The PCL:SV consists of 12 items, half of which assess the interpersonal and affective traits of psychopathy (Factor 1: superficial, grandiose, deceitful, lacks remorse, lacks empathy, and does not accept responsibility), and half of which assess the impulsive and antisocial behavioral features often associated with psychopathy (Factor 2: impulsive, poor behavioral controls, lacks goals, irresponsible, adolescent antisocial behavior, and adult antisocial behavior). In this sample, PCL:SV Factor 1 scores were moderately ( $r = .57$ ) correlated with Factor 2 scores.

Prior to the study, interviewers completed a full-day of training on the PCL:SV conducted by Stephen Hart and Robert Hare. Following this training, interviewers independently viewed over 10 videotaped cases, scored each on the PCL:SV, and sent their responses to Stephen Hart for reliability analyses and approval. Following approval, interviewers scored each of the 12 PCL:SV items as 2 (*yes, item applies*), 1 (*maybe, item applies to some extent*), or 0 (*no, item does not apply*). Items that could not be completed (with a maximum of one item per factor per case) were prorated as recommended by Hart et al. (1995). Only 3.6% of patients' scores were prorated. Items were scored based chiefly on information from patient interviews but also reflected information from hospital records. Interviewers did not conduct additional record reviews or collateral interviews solely for the purpose of completing the PCL:SV. Instead, they considered information gleaned from these sources for other purposes (to code or rate over 100 variables that were part of the RAS) when they rated their patients on the PCL:SV. The PCL:SV's psychometric characteristics in this sample (e.g., its fair interrater reliability and internal consistency, its theoretically coherent pattern of relationships with other variables, and its strong predictive utility for violence) are described in Skeem and Mulvey's (2001) study.

The appropriate factor structure of the PCL measures is a topic of considerable debate in the psychopathy literature. At the heart of the debate is whether several items that reference antisocial behavior should be

deleted because they are poor indicators of the psychopathy construct (Cooke & Michie, 2001; Hare, 2003) and are better construed as nonspecific consequences of psychopathy (Cooke, Michie, Hart, & Clark, 2004). Because addressing this debate is beyond the scope of the current article, we present results that reflect both the full and reduced PCL:SV item sets. The full item set is included in both the traditional two-factor model (Hare, 1991) and the derivative four-factor model (which splits the two traditional factors; Hare, 2003). We present results based on the traditional model to permit interpretation in light of our past research (Skeem & Mulvey, 2001). The reduced item set is based on a three-factor model (Cooke & Michie, 2001) that was shown to fit the present data better than the two-factor model (Skeem et al., 2003). (The relative fit of the three- and four-factor models has yet to be tested.) This three-factor model drops the most violence-predictive PCL:SV items (poor behavioral controls, adolescent antisocial behavior, and adult antisocial behavior) and creates an interpersonal (arrogant and deceitful interpersonal style), affective (deficient emotional experience), and behavioral (irresponsible and impulsive behavioral style) factor. For most of the analyses presented in this article, ordinal and continuous PCL:SV scores were used (for items and scales, respectively). Results are presented on the basis of the traditional two-factor model (full item set), with departures for the three-factor model (reduced item set) noted whenever relevant.

**Violence.** We assessed violence using an approach that built on that used in earlier research (Lidz et al., 1993). In this approach, the interviewer asked patients and collateral informants at each interview whether the patient had engaged in any of eight categories of aggressive behavior (e.g., kicking, hitting) in the past 10 weeks. When respondents endorsed an aggressive behavior, they were asked to report the number of times the behavior occurred and to describe the incidents. If multiple aggressive acts were associated with a particular incident, then only the most serious act that occurred during the incident was coded. Aggressive acts reported by any information source (patients, collateral informants, or official records) at any follow-up were independently reviewed by two trained coders to obtain a single reconciled report of the act. Any coding disagreements were resolved through discussion in team meetings. This reliance on multiple information sources to code violence reduces the likelihood that either the NEO-FFI (self-report) or PCL:SV (self- and other-report) had any shared method-based advantage in postdicting violence.

In this study, *violence* was defined as battery that resulted in physical injury (ranging from bruises to death), sexual assaults, assaultive acts that involved the use of a weapon, or threats made with a weapon in hand. The violence variable reflects whether a patient committed any of these act(s) of violence in the community during the entire follow-up period (i.e., 1 year after hospital discharge). The 1-year follow-up period is used primarily because personality traits are assumed to be relatively static constructs, so risk associated with these traits should not fluctuate across follow-up intervals. The base rate of violence in this sample was 27.3%. The prototypic form of violence was battery that resulted in minor physical injury (i.e., a patient hit someone they knew, causing minor bruises or cuts). Detailed descriptions of violence are provided by Monahan et al. (2001).

**Behavioral covariates.** Five behavioral covariates of the NEO-FFI and PCL:SV were used in this study to help identify the traits that maximally postdicted violence. Each of these covariates was assessed at baseline. The behavioral covariates were criminal history and past violence. Four indices of criminal history were used, including (a) the patient's self-reported frequency of prior arrests since age 15 years (coded as none, once, twice, three or more), (b) the patient's self-reported type of prior arrests since age 15 years (coded as none; property and minor crimes; serious crimes including rape, assault, and robbery; murder), (c) police record of arrest(s) for crimes against persons since age 18 years (coded as yes/no), and (d) police record of arrest(s) for crimes against property since age 18 years (coded as yes/no). A single index of past violence was used and reflected the patient's self-report of whether he or she was involved in a violent act (defined in the same way as violence in the preceding section) in the 2

months preceding the index hospital admission. These covariates were weakly to moderately associated with later violence during the follow-up period (mean  $r = .21$ , range =  $.16-.29$ ).

## Results

The goal of our analyses was to determine the relationships among various personality traits and violence. First, we assessed the relation between the five broad personality dimensions tapped by the NEO-FFI and patients' violence. Second, we assessed the nature and extent of overlap between the NEO-FFI and psychopathy as assessed by the PCL:SV. Given the overlap between the FFM and psychopathy, we specifically included a test of the ability of each personality construct to postdict violence after controlling for the other. In an effort to focus on personality constructs, analyses of the postdictive utility of traits often were conducted while controlling for past violent and antisocial acts. Although we report PCL:SV-related results based on the scale's two-factor model, we also conducted analyses using the better fitting three-factor model (Skeem et al., 2003) and describe divergent results when relevant.

### Utility of the FFM of Personality in Postdicting Violence

To assess the extent to which the broad domains of the FFM postdicted violence among psychiatric patients, we entered the five NEO-FFI scales as a block in a logistic regression analysis with violence as the dependent measure. A test of the full model with all five traits against a constant-only model was significant,  $\chi^2(3, N = 769) = 77.40, p < .001$ , indicating that this group of traits reliably distinguished violent and nonviolent patients. Postdiction success was fair, with an overall success rate of 73%. The strength of the association between these traits and violence was moderate ( $R = .37, R^2 = .14$ ).

This analysis indicated the extent to which the five traits of the NEO-FFI as a group accounted for systematic variation in violence. Because stepwise procedures are poorly suited for developing structural models for postdicting outcomes (particularly when postdictors are correlated), we also assessed the univariate relation

between each of the five traits and violence. The strongest correlates of violence were antagonism ( $\eta = .26, p < .01$ ) and, to a lesser extent, neuroticism ( $\eta = .10, p < .01$ ). In contrast, extraversion ( $\eta = .06$ ), openness ( $\eta = -.05$ ), and conscientiousness ( $\eta = -.02$ ) were not significantly related to violence. In sum, these analyses revealed that the NEO-FFI was significantly postdictive of violence in this sample, with the largest share of the variance attributable to the trait of antagonism.

### Relations Among the FFM, Psychopathy, and Violence

Given the relatively strong theoretical association between the constructs of antagonism and psychopathy (described earlier), the next logical step was to address the relations among the FFM, psychopathy, and violence. We specifically were interested in determining the extent to which the traits of the FFM most related to violence and psychopathy were overlapping. To address this, we assessed the associations among the traits tapped by the NEO-FFI and PCL:SV and then assessed the incremental utility of each of these measures over the other in postdicting violence.

*Association between the FFM and psychopathy.* The overall association between the NEO-FFI and PCL:SV was moderate ( $R = .43$ ). As can be seen in Table 1, total PCL:SV scores were moderately associated with antagonism ( $r = .40$ ) and modestly inversely associated with conscientiousness ( $r = -.13$ ). At the factor level, each of the PCL:SV factors was moderately associated with antagonism. However, Factor 2 was also moderately associated with conscientiousness ( $r = -.20$ ). Moreover, when the covariation between Factors 1 and 2 was controlled, antagonism was more strongly associated with Factor 2 (partial  $r = .25$ ) than Factor 1 (partial  $r = .14$ ).

Table 1 shows the associations between the NEO-FFI dimensions and the PCL factors. Three general points can be drawn from this table. First, the NEO-FFI appeared more strongly related to Factor 2 than Factor 1 of the PCL:SV. Second, the theoretically coherent pattern of associations among the NEO-FFI factors and the three-factor model of psychopathy provided support for the convergent validity of both measures. Third, and most importantly,

Table 1  
Association Between the Five-Factor Model (FFM) and Psychopathy

Psychopathy	FFM				
	Neuroticism	Extraversion	Openness	Agreeableness (vs. antagonism)	Conscientiousness
Two factor					
Total	.05	.02	-.09*	-.40**	-.13**
Factor 1	-.02	.05	-.03	-.33**	-.03
Partial $r^a$	.01	.08*	.06	-.14**	.11*
Factor 2	.10**	-.02	-.12**	-.39**	-.20**
Partial $r^a$	.14**	-.06	-.13**	-.25**	-.23**
Three factor					
Total	.03	.02	.07*	-.36**	-.10**
Interpersonal	-.06	.11**	.05	-.25**	.02
Affective	.01	-.02	-.10**	-.35**	-.06
Behavioral	.10**	-.02	-.12**	-.29**	-.19**

<sup>a</sup> Partial correlation with each FFM domain, controlling for covariation with the other PCL factor.  
\*  $p < .05$ . \*\*  $p < .01$ .

the data were consistent with the notion that there was considerable overlap among the most violence-postdictive personality components of the NEO-FFI and the PCL:SV. Thus, we next directly assessed the extent to which these two scales were tapping the same violence-predictive variance.

*Incremental utility of the FFM and psychopathy.* First, we assessed the incremental utility of the FFM in postdicting violence after controlling for the effects of psychopathy using a sequential logistic regression analysis. This analysis indicated that there was a good fit on the basis of PCL:SV total scores alone,  $\chi^2(1, N = 735) = 107.76, p < .001, R^2 = .20$ . The fit of the model that included participants' NEO-FFI scale scores was also significant,  $\chi^2(6, N = 735) = 142.66, p < .001, R^2 = .26$ , with the addition of these scales significantly improving model fit,  $\chi^2(5, N = 757) = 34.90, p < .001, \Delta R^2 = .06$ . The significant NEO-FFI postdictors of violence, after controlling for psychopathy, were antagonism (Wald = 15.81,  $p < .001$ ), neuroticism (Wald = 11.57,  $p = .001$ ), and extraversion (Wald = 9.33,  $p = .002$ ).

We conducted a second sequential logistic regression to assess the incremental utility of the PCL:SV in postdicting violence after controlling for the NEO-FFI. The results indicated that there was a good fit on the basis of the NEO-FFI domain scores alone,  $\chi^2(5, N = 735) = 77.52, p < .001, R^2 = .15$ . The fit of the model that included participants' PCL:SV total scores was also significant,  $\chi^2(6, N = 735) = 142.66, p < .001, R^2 = .26$ , with the addition of this scale significantly improving model fit,  $\chi^2(1, N = 735) = 65.13, p < .001, \Delta R^2 = .11$ . The size of the improvement for the addition of the PCL:SV scores ( $\Delta R^2 = .11$ ) was larger than that obtained with the addition of the NEO-FFI scores in the previous analysis ( $\Delta R^2 = .06$ ), suggesting that the PCL:SV adds more variance to the NEO-FFI in postdicting violence than vice versa.

Subsequent analyses revealed that the traditional model PCL:SV's incremental utility in postdicting violence was almost wholly attributable to Factor 2 scores. We conducted a third sequential logistic regression analysis in which the NEO-FFI was entered, followed by stepwise entry of PCL:SV Factor 1 and Factor 2 scores (forward stepping, based on likelihood ratio statistics). After entry of the NEO-FFI, only Factor 2 scores significantly postdicted violence and entered the equation (Wald = 65.28,  $p < .001$ ). Nevertheless, the effect size for this Factor 2 only model was as large as that for PCL:SV total scores (e.g.,  $R^2 = .27$ ). To provide a finer resolution picture of the uniquely violence-predictive features assessed by the PCL:SV, we repeated this analysis using the 12 PCL:SV items. After entry of the NEO-FFI, four PCL:SV items entered the equation and significantly postdicted violence: poor behavior controls (Wald = 26.63,  $p < .001$ ), conning-manipulative (Wald = 6.73,  $p < .01$ ), adolescent antisocial behavior (Wald = 5.78,  $p < .05$ ), and adult antisocial behavior (Wald = 4.12,  $p < .05$ ). These results are considered preliminary, given the limited reliability of individual items, but they identify PCL:SV items that appear incrementally useful.

With the exception of conning-manipulative, these incrementally useful items are from the traditional PCL:SV Factor 2. They reflect past irresponsible and antisocial behavior that (a) may not be specific to psychopathic personality deviation (see Cooke & Michie's, 2001, study) and (b) are relatively strongly postdictive of violence (Skeem & Mulvey, 2001). Because our interest was in identifying the most violence-postdictive personality traits in this sample, we performed a second series of analyses that tested the

incremental utility of the FFM and psychopathy in postdicting violence after controlling for indices of past violence and antisocial behavior.

*Incremental utility of the FFM and psychopathy, controlling for past violent and antisocial behavior.* First, a sequential logistic regression analysis was performed to assess the incremental utility of PCL:SV total scores in postdicting violence after controlling for both the NEO-FFI and past violent and antisocial behavior. Covariates entered initially were four indices of criminal history and the indicator of recent violence (direct entry) and the NEO-FFI domains (direct entry) followed by the two PCL:SV factors (stepwise entry). There was a good model fit on the basis of the covariates alone,  $\chi^2(13, N = 660) = 117.70, p < .001, R^2 = .24$ , and with the addition of the PCL:SV factors,  $\chi^2(14, N = 681) = 151.10, p < .001, R^2 = .30$ . Only PCL:SV Factor 2 entered the equation, but its entry significantly increased postdictive efficiency,  $\chi^2(1, N = 660) = 33.40, p < .001, \Delta R^2 = .06$ . Thus, even after controlling for past violent and antisocial behavior, as well as the NEO-FFI, traits captured by PCL:SV Factor 2 significantly postdicted violence. Notably, when this analysis was repeated on the basis of the PCL:SV revised three-factor model ( $n = 661$ ), the interpersonal (Wald = 6.13,  $p = .013$ ), and behavioral (Wald = 4.62,  $p = .032$ ) factors were significantly related to violence after controlling for past behavior and the NEO-FFI, but the size of improvement was less substantial ( $\Delta R^2 = .03$ ).

Second, a parallel sequential logistic regression analysis was performed to assess the incremental utility of NEO-FFI scores in postdicting violence after controlling for both the PCL:SV factors and past violent and antisocial behavior. There was good model fit on the basis of the covariates alone,  $\chi^2(10, N = 660) = 126.03, p < .001, R^2 = .25$ , as well as the model that included the NEO-FFI domains,  $\chi^2(13, N = 660) = 144.96, p < .001, R^2 = .29$ , with the addition of these domains significantly improving model accuracy,  $\chi^2(3, N = 660) = 18.93, p < .001, \Delta R^2 = .04$ . Three of the NEO-FFI domains significantly improved the post-diction of violence, including antagonism (Wald = 9.53,  $p = .002$ ), conscientiousness (Wald = 8.57,  $p = .003$ ), and neuroticism (Wald = 5.21,  $p = .002$ ).

In summary, the results of these analyses suggest that, as expected, there is a moderate degree of overlap between the NEO-FFI domains (primarily antagonism) and psychopathy as assessed by the PCL:SV (primarily Factor 2). Nevertheless, even when controlling for past antisocial behavior and violence, the NEO-FFI ( $\Delta R^2 = .04$ ) and PCL:SV ( $\Delta R^2 = .06, .03$ ) each appear to capture a small amount of unique personality variance significantly related to violence.

### *Basic Utility of the FFM and Psychopathy*

For the sake of completeness, we also assessed the basic postdictive utility of both the FFM and psychopathy, controlling for indices of past violent and criminal behavior via two sequential logistic regression analyses. First, after entering the indices of criminal history and recent violence (direct entry), the NEO-FFI factors (direct entry) significantly improved the postdiction of violence,  $\chi^2(5, N = 681) = 45.95, p < .001, \Delta R^2 = .08$ . Second, after entering the indices of criminal history and recent violence (direct entry), the PCL:SV factors (direct entry) significantly improved the postdiction of violence,  $\chi^2(2, N = 754) = 57.39, p <$

.001,  $\Delta R^2 = .09$ . Thus, these results suggest that the FFM and psychopathy are approximately equally postdictive of violence when controlling for their association with past misconduct ( $\Delta R^2 = .08, .09$ ).

### Discussion

Building on prior work (Skeem & Mulvey, 2001), in this study we explored the possibility that scores on a leading measure of psychopathy provide a glimpse of higher order personality traits that predispose individuals toward violence. Using general personality constructs that rarely have been addressed in this context, we attempted to unpack the observed relationship between this measure of psychopathy and violence among psychiatric patients. Our findings revolve around two points. First, general personality traits captured by the NEO-FFI are relatively strong postdictors of violence among civil psychiatric patients. In contrast with prevailing public notions, similarities in the postdictors of violence for individuals with and without mental illnesses may outweigh the differences. Second, these general traits overlap moderately with PCL:SV psychopathy, although both measures contribute a small amount of unique variance in postdicting violence. This overlap suggests that it may be appropriate to broaden focus in risk assessment to include patients' general personality traits. In this section, we discuss each of these issues in turn.

#### *General FFM Personality Traits Postdict Patients' Violence*

To our knowledge, this is the first large-scale investigation of the utility of the relation between the FFM and violence. We found that the FFM, as assessed by the NEO-FFI, was moderately postdictive of violence among civil psychiatric patients ( $R = .37$ ). In fact, the basic association between the NEO-FFI and violence approached that of the PCL:SV ( $R = .42$ ), the strongest single risk factor for violence in the RAS. This is remarkable, particularly given that the NEO-FFI does not fully represent the FFM's multifaceted structure and may therefore underestimate the relation between the FFM and violence. Clearly, personality factors are important correlates of violence, even for civil psychiatric patients.

Of the NEO-FFI domains, antagonism was moderately ( $\eta = .26$ ) and neuroticism was weakly ( $\eta = .10$ ) related to violence. The remaining three domains had little power. Our results are grossly consistent with the few available investigations of the FFM and violence-relevant behavior. In such studies, antagonism has emerged as the strongest correlate of antisocial behavior among criminal offenders (Miller & Lynam, 2003) and as the second strongest (after neuroticism) correlate of anger and aggression among community residents (Caprara et al., 1996). Beyond their consistency with past work, these results make intuitive sense. Antagonism is a highly interpersonal construct that includes such traits as suspiciousness, combativeness, deceptiveness, lack of empathy, and arrogance. One can easily imagine how antagonism might predispose someone toward violent transactions with others. Similarly, neuroticism includes traits of angry hostility, impulsiveness, anxiousness, and trait depression, which are linked conceptually with violence proneness.

Notably, conscientiousness was not postdictive of violence in this study. However, on the basis of their meta-analysis, Miller and

Lynam (2003) concluded that antagonism and low conscientiousness were the most important dimensions for describing those involved in antisocial behavior. These divergent findings may reflect true differences in the target populations or outcomes, measurement error, or both. With respect to true differences, conscientiousness may play a less important role in outcomes for psychiatric patients than criminal offenders. In addition, people who are low in conscientiousness (e.g., lax, undependable, aimless, negligent, hasty) may be more predisposed toward general antisocial behavior than interpersonal violence per se. Alternatively, conscientiousness may have been inadequately assessed in this study. In fact, this study may underestimate the relation of violence to both conscientiousness and antagonism, given our use of the NEO-FFI. The NEO-FFI possesses no facet scales for these two dimensions. A comparison of the NEO-FFI and NEO-PI-R items suggests that such key traits as deliberation (conscientiousness) and modesty (low antagonism) are not assessed adequately by the NEO-FFI. In short, the role of conscientiousness in understanding violence requires further examination, preferably with a fully intact measure of this personality domain like the NEO-PI-R.

Despite such potential measurement error, this study clearly demonstrates that general personality traits assessed by the FFM are important risk factors for violence among civil psychiatric patients. Of general traits included in the FFM, antagonism is the most strongly related to interpersonal violence.

#### *Overlap Among General Traits, PCL:SV Psychopathy, and Violence*

*Overlap between the FFM and PCL psychopathy.* The relatively strong association of the NEO-FFI and the PCL:SV with violence in this study raises a question about the extent to which the personality constructs tapped by these measures overlap. The results suggest that the overlap between the NEO-FFI and PCL:SV (especially Factor 2) is moderate ( $R = .43$ ). The nature of the overlap among the scales of these measures raises three important issues.

First, the overlap is consistent with translations of psychopathy into FFM terms (Lynam, 2002; Widiger & Lynam, 1998), which posit that Factor 1 comprises antagonism alone, whereas Factor 2 comprises both antagonism and low conscientiousness (see Table 1). Second, the theoretically coherent pattern of relations between the NEO-FFI and a better fitting, three-factor model of PCL:SV psychopathy (Cooke & Michie, 2001; Skeem et al., 2003) bode favorably for the construct validity of both models. Although the strongest correlate of all three PCL:SV factors was antagonism, there were distinctive relationships as well. Specifically, the PCL:SV interpersonal factor also was significantly associated with extraversion (a tendency toward sociability and agency); its affective factor was associated with low openness, which includes emotional unresponsivity (see McCrae's, 1996, study); finally, its behavioral factor was associated with low conscientiousness and high neuroticism. Low conscientiousness may reflect difficulty with impulse control, difficulty delaying gratification, and problems with response modulation (Newman, 1987). Neuroticism includes traits of high angry hostility—or a tendency to experience anger and frustration—and (sometimes) impulsiveness, which is conceptualized as a difficulty controlling urges or cravings.

Third, and most importantly, the nature of the overlap between the PCL:SV and NEO-FFI suggests that the two scales' association with violence is at least partially based on their assessment of a similar construct. Antagonism and PCL:SV Factor 2 are moderately associated with one another, as well as violence in this sample.

*Incremental utility of the NEO-FFI and PCL:SV.* Notably, after controlling for past misbehavior, the PCL:SV and NEO-FFI as whole instruments account for similar amounts of variance in violence. The two measures share much of their violence-postdictive variance, although each measure captures unique traits that modestly improve accuracy. Specifically, after controlling for its association with past misbehavior and PCL:SV scores, the NEO-FFI (particularly antagonism, neuroticism, and extraversion) modestly increases the ability to postdict violence. Similarly, after controlling for past misbehavior and NEO-FFI scores, the PCL:SV (particularly Factor 2) modestly increases the ability to postdict violence. These latter results are consistent with those of Knap's (1999) study. In this unpublished dissertation, Knap found that the FFM outperformed Factor 1 and performed equally as well as Factor 2 in postdicting 132 offenders' violent offenses.

The results of this study provide a rough picture of the violence-related traits that the NEO-FFI and PCL:SV both share and assess uniquely. The measures overlap in assessing the heavyweight violence-related constructs tapped by antagonism and PCL:SV Factor 2, although not perfectly so. In contrast, the NEO-FFI contributes neuroticism relatively uniquely as a postdictor, whereas the PCL:SV contributes interpersonal features of psychopathy (conning-manipulative traits). (Notably, it is possible that an alternative FFM measure like the NEO-PI-R would better tap manipulateness that relates to aggression [Miller et al., 2003].) Although adding the unique traits that each measure contributes to the measures' shared traits statistically improves accuracy in predicting violence, the boost is modest and does not appear particularly meaningful.

*Implications: Broadening the personality focus in violence risk assessment.* Our central findings are that broad personality traits (particularly antagonism) (a) are consistently, interpretably, and relatively strongly related to violence and (b) overlap heavily with the violence-predictive aspects of the PCL:SV. Thus, assessment of normal personality may be useful for risk assessment, in addition to or in place of assessment of psychopathy.

Our current findings are consistent with our prior work (Skeem & Mulvey, 2001), which suggests that the PCL:SV's power in predicting patients' violence is less a function of the interpersonal and affective features of psychopathy (Factor 1) than of higher order personality traits that may be associated with social deviance (Factor 2). Given that antagonism overlaps substantially with the most violence-predictive aspect of the PCL:SV, the construct of psychopathy may not be necessary in this risk assessment context. Because psychopathy connotes specific interpersonal and affective traits that are not uniquely postdictive of violence, it may be beneficial in most cases to rely on measures of general personality or on measures specifically designed to assess or screen patients' violence risk (see Skeem, Mulvey, Lidz, Gardner, & Schubert's, 2002, study). Reliance on general personality measures also may be more practical in most cases, given that self-report measures reserve precious clinical resources that otherwise would be spent to complete intensive interview- and file-based measures of psy-

chopathy. Moreover, the use of general measures seems ethically sound in that it reduces the risk of practitioners making faulty assumptions that most patients at high risk for violence (a) have a malignant personality disorder and will callously attack others to achieve control over and exploit them and (b) are unlikely to benefit from treatment (despite a developing body of evidence to the contrary; see the following studies: Caldwell, Skeem, Salekin, & Van Rybroek, 2004; Harris, Rice, & Cormier, 1991; Salekin, 2002; Skeem, Monahan, & Mulvey, 2002). Neither of these possible conclusions seems warranted or productive.

#### *Direction for Future Research: Impulsive Hostility?*

We found that the PCL:SV and NEO-FFI share much of their violence-predictive variance, primarily in the form of overlap between their Factor 2 and antagonism scales. Among the most violence-predictive Factor 2 items were poor behavioral controls (which describes people who are easily angered, often manifesting sudden outbursts; Hart et al., 1995) and impulsivity. Factor 2, in turn, was meaningfully associated with antagonism (suspiciousness and combativeness) and low conscientiousness (poor impulse control).

Given these preliminary findings, future researchers could apply theoretical frameworks and research paradigms from related fields to examine whether hostile attributional styles and impulsive pre-processing link these traits with violence (see Crick & Dodge's, 1994, study). Some evidence indirectly suggests that this may be a fruitful avenue to pursue. First, on the basis of a study of 110 psychiatric inpatients, McNeil, Eisner, and Binder (2003) found that angry cognition and, to a lesser extent, persecutory ideas and threat-control override delusions (that others will harm one or that outside forces control one's mind) postdicted violence prior to hospitalization. McNeil et al. concluded that a characteristic "perception that others are driven by dispositional ill will to target one for serious, unprovoked harm against which one has every right to defend oneself" (p. 399) predisposes patients to violence. Second, Appelbaum et al. (2000) found that the relationship between threat-control override symptoms and violence in the RAS largely was artifactual. The relationship typically may "be accounted for by an association between a generally suspicious attitude toward others—with associated anger and impulsiveness—and violent behavior" (Monahan et al., 2001, p. 77). In short, then, broader personality traits may be at work and a fuller picture of these might improve understanding of violence potential.

#### *Conclusion*

The results of this first, large-scale investigation of the relations among the FFM, psychopathy, and violence are promising. They point to the possibility that personality-based factors operate in individuals with mental illness to raise the risk of involvement in violence. It may be that much of what is known about predispositions to violence in other populations applies to individuals with mental illnesses as well.

These results, however, are only a first step toward such a conclusion. They must be replicated in future research that overcomes some of the limitations of this investigation. First, future research has to sort out potentially confounding measurement issues associated with the approach taken here. Some of the

apparently unique variance of the measures used in this investigation may reflect method variance (self-report vs. rating scale) rather than construct variance. The likely impact of this factor may be assessed in future work that uses true multitrait, multimethod designs (Campbell & Fiske, 1959) to assess the relations among the FFM, psychopathy, and violence. Second, use of measures that more completely assess FFM facets (e.g., NEO-PI-R) also would be desirable. A more comprehensive measure of the FFM may yield a higher resolution picture of the links among FFM traits, psychopathy, and violence, as well as hypotheses about the mechanisms that underlie these relationships. Third, exploration of the relation among the FFM, psychopathy, and violence in offender samples and nonreferred samples is necessary. Finally, future research that uses truly prospective, predictive designs—rather than the postdictive one used here—would be valuable. Only a temporally sequenced, careful examination of the influence of these variables over time will provide the information necessary to make a convincing case about the relative impact of personality traits and other risk factors on violence.

Even given these limitations, this study significantly broadens our view of factors related to violence among psychiatric patients. It helps to unpack the relation of mental illness and personality to violence. This study also points toward aspects of personality functioning that may later prove fruitful for understanding and intervening with potentially violent individuals. A focus on personality will not make the relation between mental disorder and violence go away. It may, however, allow researchers and clinicians to think about violence among the mentally ill in more refined, theoretically rich, and ultimately more practical terms.

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