

Assessing Risk for Forensic Psychiatric Inpatient Violence: A Meta-analysis

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Abstract: Inpatient violence in psychiatric settings is a global problem, but it is particularly a problem in forensic settings containing a mix of acutely mentally ill and/or antisocial patients. The authors recognized a need for new ways to identify and to increase staff awareness and vigilance around at-risk patients. To this end, a literature review was initiated to synthesize the factors that predict forensic inpatient violence from existing literature. The results indicate that the HCR-20, the clinical scale in particular, and the Hare psychopathy scales may be particularly useful in assessing risk for forensic psychiatric inpatient violence.

Keywords: inpatient violence, risk assessment, forensic psychiatry.

In the Acute Assessment & Treatment Program of Alberta Hospital Edmonton (AHE), like other forensic psychiatric units, inpatient violence is an ongoing problem. The patient population of this maximum-security unit includes a potentially dangerous mix of acutely mentally ill and/or antisocial patients, most of whom were admitted because of violence and aggression.

In addition to the commonsense reasons to avoid it, there has been a great deal of research addressing the negative consequences of inpatient violence. Interpersonal violence is recognized as a problem within psychiatric populations internationally (Chou, Lu, & Mao, 2002) and, according to Rippon (2000), rates were increasing at the turn of the century. There is agreement within the literature that healthcare staff are at risk for both physical (Bowers, Allan, Simpson, Nijman, & Warren, 2007; Daffern & Howells, 2002; Johnson, 2004) and psychological (Inoue, Tsukano, Muraoka, Kaneko, & Okamura, 2006; Johnson, 2004; Rippon, 2000) injury from inpatient aggression. There is also evidence to suggest that inpatient violence negatively affects the other patients, impairs the therapeutic milieu of a unit, and creates a financial burden for the institution (Daffern & Howells, 2002). Furthermore, inpatient violence is considered to be an even greater problem in forensic settings (Hill, Rogers, & Bickford, 1996; McDermott, Edens, Quanbeck, & Busse, 2008).

There is a great deal of research that addresses inpatient violence in civil psychiatric settings (see Bowers et al., 2007; Chou et al., 2002; Johnson, 2004; Serper, Beech, Harvey, & Dill, 2008) and in correctional settings (see Edens & Ruiz, 2009; Endrass, Rosseger, Urbaniok, Laubacher, & Vetter, 2008; French & Gendreau, 2006; Sorensen & Cunningham, 2010), but research addressing forensic psychiatric populations is

relatively scarce. Often, those studies that do include forensic psychiatric settings simply add them to larger pools of institutional or correctional samples (Campbell, French, & Gendreau, 2009). This is a problem because forensic psychiatric units contain a unique population such that research in other settings does not translate well to these specialized hospital settings. In fact, one summary of the factors associated with institutional violence included: not having been found not criminally responsible (NCR) by reason of mental disorder (Quinsey, Harris, Rice, & Cormier, 2005). Obviously, more information is needed if one wishes to distinguish among a group of people who have all been found NCR on a forensic psychiatric unit.

To address the issues discussed already, the current authors turned to the existing literature to find factors, individual characteristics, or instruments that might inform assessments of risk for inpatient violence in the Acute Assessment and Treatment Program and other forensic psychiatric units.

Methods

In addition to a smaller scale paper-based literature review, an electronic literature search was conducted using the following databases: PsycINFO, Web of Science, and Google Scholar. Search terms included terms related to forensic and psychiatric populations (e.g., *Forensic Psychiatric, inpatient, mental health, institutional*), terms related to prediction and correlations, and terms related to violence in hospital (e.g., *violence, aggression, seclusions, untoward incidents*). Inclusion criteria simply required that studies contain a sample in a forensic psychiatric unit (e.g., includes patients found not criminally responsible and may include patients found unfit to stand trial and/or forensic assessments) and outcome criteria including, but not necessarily limited to, physical violence against another person. To clarify, due to variability in methods among the existing literature, the outcome variables included in this study range from pure physical violence against people to combined measures that count physical violence against people along with verbal threats and/or violence against property as a single variable. Studies were also required to be published in English in the last 15 years (1996 and later), to include adult subjects (18+), and to include a sample consisting mostly ($\geq 50\%$) or entirely of males (to avoid specialized units like those including all females).

From this body of literature, a list was compiled of all the variables that had been found to have a significant association with forensic inpatient violence in at least one study and the total number of studies that had assessed each of them. The result was a list of factors nearly as long as the list of studies, because relatively few variables have been assessed in multiple studies using relevant samples. Since none of the factors stood out after this initial step, the results were narrowed down further to only those factors that had been assessed in at least three studies, for a basic statistical meta-analysis. This step took the total number studies that met inclusion criteria from 22 down to 16.

Once the project progressed to the stage of the statistical meta-analysis, the presence of statistics that could be converted to an *r* correlation coefficient was added to the

inclusion criteria. For this analysis, Hunter and Schmidt's (2004) method of calculating the weighted mean effect size and credibility intervals, with weighting based on sample size, was used. This method was chosen because 1) there was insufficient data to complete more complex analyses and it provides a relatively straightforward way to compare effect sizes and 2) it uses r correlation coefficients, which were provided in the majority of the studies used. Statistical values other than r values were converted to r with the appropriate calculations (Baugh, 2002; Hunter & Schmidt, 1990; Rice & Harris, 2005).

The measures/factors analyzed were age, scores on the Brief Psychiatric Rating Scale (BPRS) (Overall & Gorham, 1962), scores on the HCR-20 (Webster, Douglas, Eaves, & Hart, 1997), and scores on the Psychopathy Checklist (PCL) (Hare, 1980), Psychopathy Checklist Revised (PCL-R) (Hare, 2003), and the Psychopathy Checklist Screening Version (PCL:SV) (Hart, Cox, & Hare, 1995).

Please note that symptoms of psychosis or diagnoses of a psychotic illness were left out of the analyses because they were recently assessed in a large meta-analysis by Douglas, Guy, and Hart (2009). They found that the relationship between psychosis and violence in forensic psychiatric settings was not statistically significant.

Results

The following mean correlation coefficients appear related to forensic psychiatric inpatient violence: age, the Hare psychopathy scales, and the HCR-20 (but not the BPRS). For the BPRS, there was a large variability in effect sizes, with unweighted effect sizes ranging from -0.13 to 0.64. The measures/factors analyzed were: age, BPRS total score, HCR-20 total score, historical scale, clinical scale, Psychopathy Checklist combined (including effect sizes for the total scores of the PCL, the PCL-R, and the PCL:SV), the PCL-R total score, and the PCL:SV total score. In addition to analyzing them individually, the Hare psychopathy scales (PCL, PCL-R, and PCL:SV) were analyzed as a single variable because there is evidence supporting the relationship among the scales (Cooke, Michie, Hart, & Hare, 1999; Hare et al., 1990). Table 1 contains the mean effect sizes and relevant statistics for each of the measures/factors. The strongest effect sizes were found for the HCR-20 Clinical scale (mean $r=0.35$) and the HCR-20 total score (mean $r=0.33$); these effect sizes can be described as medium-sized based on Cohen's (1998) criteria. Figure 1 illustrates the size and valence of the mean correlation coefficients for each of the analyses.

Table 1

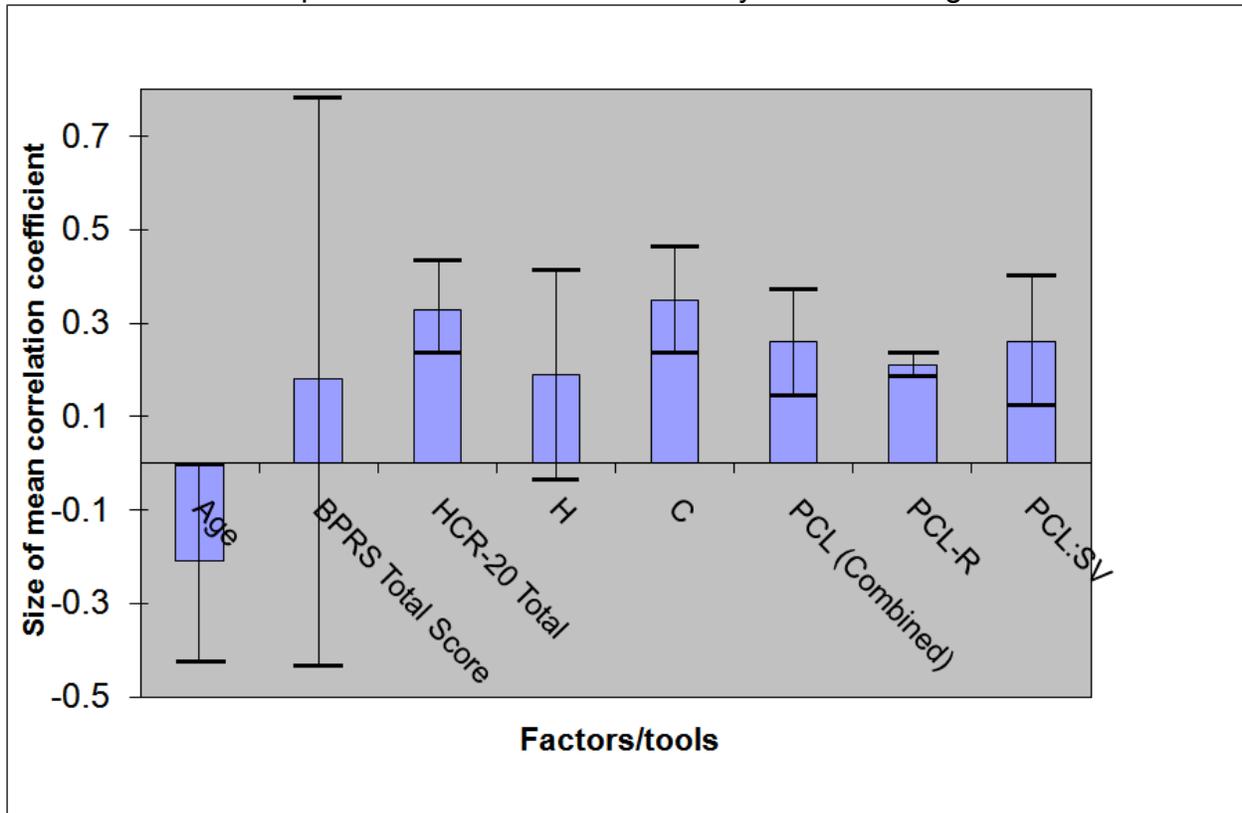
Mean Effect Sizes of Measures and Factors Associated with Forensic Inpatient Violence

Measure/Factors	Number of effect sizes	Total <i>n</i>	Weighted mean <i>r</i>	CI
Age	6	683	-0.21	(-0.43, 0.00)
BPRS Total Score	4	468	0.18	(-0.44, 0.79)
HCR-20 Total	4	243	0.33	(0.23, 0.44)
H	6	414	0.19	(-0.04, 0.42)
C	5	327	0.35	(0.23, 0.47)
PCL (Combined)	12	1313	0.26	(0.14, 0.38)
PCL-R	3	254	0.21	(0.18, 0.23)
PCL:SV	8	827	0.26	(0.12, 0.41)

Note: CI = credibility interval; PCL (Combined) includes effect sizes for the PCL, PCL-R, and PCL:SV.

Figure 1

Mean *r* Values with 95% Credibility Intervals for Factors/Measures Associated with Inpatient Violence in Forensic Psychiatric Settings



Discussion

Based on the results presented above, there is evidence to support the use of the HCR-20 and the Hare psychopathy scales to inform assessments of risk for inpatient violence. Although age was consistently found to have some relationship with forensic inpatient violence, it should be noted that the differences in age between violent and non-violent groups were very small, so it would be impractical to use age to distinguish between higher and lower risk patients. While the clinical scale of the HCR-20 showed the largest mean effect size, its credibility interval shows substantial overlap with those of other measures like the PCL:SV, so there is no clear winner in this analysis. These results seem congruent with existing literature. For example, whereas Campbell et al (2009) included a broader range of samples in their meta-analysis of institutional violence, there is nonetheless some agreement between their results and those of the current study. Both studies identified the HCR-20 and the Hare psychopathy scales as useful predictors of institutional violence, and also identified the PCL:SV as more useful than the PCL-R. Having said this, there is still some disagreement within the literature about the utility of the Hare scales in predicting institutional violence (Vitacco et al., 2009), possibly due to differences among samples and/or sub-types of aggression. As

a result, although the positive results of this study may be explained by its focus on forensic psychiatric inpatient samples, this conclusion is tentative at best.

Despite the fact that the BPRS should, in theory, be tapping into a similar construct such as that of the HCR-20 clinical scale, there is not evidence to support its utility in predicting forensic inpatient violence. This is due to a large amount of variability among effect sizes for the BPRS. There is a variety of possible explanations for this finding. One possible explanation is the inconsistency in outcome measures among studies, which is an issue for this study as a whole. A second explanation is the actual implementation of the BPRS itself. There are multiple versions of the BPRS and the author observed variability in terms of which version of the tool was used. Additionally, the procedures for administering the BPRS varied, in that some studies administered it only once, others administered it at fixed intervals, and others administered the tool at variable intervals.

Considering that Archer, Bluffington-Vollum, Stredny, and Handel (2006) found that the Hare psychopathy scales and the HCR-20 are the most commonly used measures in the risk assessments conducted by forensic psychologists, and that risk assessment is a major part of the job of a forensic psychologist in these settings, the results of the current study should be easily applied to current practices. If these tools are already being used to assess a patient's risk for violent recidivism in general, the scores can easily be applied to an evaluation of his or her risk for inpatient violence. Having identified a patient as being at risk for inpatient violence, staff can monitor a patient more closely, and possibly use something like the HCR-20 clinical scale as a dynamic measure. In doing so, practitioners could pro-actively further the study of the utility of these tools.

This study does have limitations. First, there is substantial variability among many of the effect sizes, as shown by the size of the 95% credibility intervals. Second, the relative scarcity of research conducted with specific forensic psychiatric samples has limited the strength of any conclusions. In fact, there are promising tools like the Broset Violence Checklist (BVC) (Almvik, Woods, & Rasmussen, 2000) that appear to be useful for predicting inpatient violence, but that have not yet been validated on forensic psychiatric samples. Furthermore, the lack of replication for many of the positive findings means some useful tools may have been missed, whereas others may appear useful due to chance. As with any literature review, this study is limited by the file-drawer effect, since only those studies that the author had access to could be included. Additionally, there is still no consensus within the literature on how to operationally define or measure violence. Some studies included verbal aggression, aggression against objects, and physical violence in their analyses, whereas others limited it to only physical violence against people. Considering all of these limitations, it is important to point out that the tools used in this study should not be used exclusively to make decisions about any patient's care.

In terms of future research, this study highlights the need for further exploration into factors that may predict forensic psychiatric inpatient violence. This may include the

expansion of existing research on reactive vs. instrumental aggression and aggression against staff versus aggression against patients. Replication of previous studies would also be useful as there may be utility in existing measures. There is also certainly still room for new tools to be developed, as there does not yet appear to be a gold standard for assessing risk for forensic psychiatric inpatient violence.

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