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The International Association of Forensic Mental Health Services is an international organization of forensic mental health workers. The Association focuses on four major areas: Clinical forensic psychiatry and psychology including family violence, Administrative/legal issues, Research in forensic mental health (civil/criminal), violence, and abuse, and Training and education. The 8th annual conference will be in Vienna in July, 2008 (For more information please see our website at www.iafmhs.org).

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From the Editor

James R. P. Ogloff
Centre for Forensic Behavioural Science
Monash University and Forensicare

This issue marks the end of my term as Editor of the *International Journal of Forensic Mental Health* and it marks a major transition for the Journal. Beginning in 2009, the *International Journal of Forensic Mental Health* will be published by a commercial publisher, Taylor and Francis. The journal will grow from two issues to four issues annually. This development marks a significant milestone in the continuing journey of the Journal. For the past seven years, the journal has been published through the Mental Health, Law, and Policy Institute at Simon Fraser University and Ronald Roesch has essentially served as the publisher. While he and his staff have done an excellent job to deliver a journal which is one of the very few that has always appeared on time, the transition to a commercial publisher will afford opportunities that will ensure the continued growth and success of the journal.

During my two years as Editor of the journal, the number of submissions has continued to grow and we now receive approximately twice as many manuscripts as when I began overseeing the review process in the summer of 2006. With the move to a commercial publisher, the number of issues of the journal will also double. This will enable the publication of many more manuscripts annually. The transition to a commercial publisher will also streamline the submission, review, and publication process. This will be a benefit to authors, reviewers, and the editorial staff alike. Of greatest benefit, though, will be the exposure the resources and profile of an international publishing house can have on our journal. Experience with other organizations that have made the move to Taylor and Francis suggests that the number of submissions and exposure of the journal will continue to grow. Importantly, the journal will establish an impact factor that will further encourage excellent submissions worldwide.

Although my term has been cut short due to competing demands on my time, some positive

developments have occurred in 2007 and 2008. Significantly, at the time I assumed the editorship, most submissions were still coming from the United States and Canada and the articles published reflected this. A goal was to attract manuscripts from other countries. Over the past two years, the manuscripts published have been drawn from more than 15 countries. The majority of manuscripts published have come from countries beyond North America. More than half of the manuscripts now come from Europe and the United Kingdom, one-third still come from Canada and the United States. The remaining manuscripts are now coming from other countries. A future challenge will be to attract and publish quality manuscripts from Asia, Africa, South America, or the Indian subcontinent.

The reputation and impact of a journal lives or dies by the authors that publish in it. To this end, we have been fortunate indeed by the range and quality of manuscripts we have been able to publish. The members of the editorial board and the numerous ad hoc reviewers on whom I have called upon have been generous with their time and have provided reviews, sometimes under short notice and with considerable pressure.

In closing, I would like to express my sincere thanks to Ronald Roesch for his yeoman efforts in establishing and publishing the journal. His efforts cannot be underestimated. When the journal was established, Ronald Roesch and Stephen Hart were the founding co-editors. I am pleased to report that Stephen Hart has been appointed Editor of the journal and that he has appointed Barry Rosenfeld and Corinne de Ruiter as Associate Editors. Having these three professors with their international reputations, scholarly, expertise and experience will ensure the long-term continued success of the journal. I wish them well in the ongoing development of what is fast becoming a leading journal in forensic mental health.

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KEY DATES

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Early registration deadline: May 1, 2009

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Professor Bernadette McSherry, Monash University, Victoria, Australia

Abstracts must be submitted using the online submission form at www.iafmhs.org by December 5, 2008. Please follow the instructions provided on the website.

Presenters are responsible for their own registration, transportation and accommodation costs. Authors/presenters must register in advance.

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1. Outcomes of Treatment in Forensic Mental Health Services
2. Sex Offending
3. Personality Disorder
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5. Risk Assessment and Management
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Adjudicative Competence Evaluations of Juvenile and Adult Defendants: Judges' Views Regarding Essential Components of Competence Reports

Jodi L. Viljoen, Twila Wingrove, and Nancy L. Ryba

Adjudicative competence evaluations are commonly requested for adult criminal defendants, and are becoming increasingly common among juvenile defendants as well. However, we do not have an understanding of what information judges seek in these evaluations. In this study, juvenile and criminal court judges from seven states (N = 166) were surveyed. Results indicated that judges: (1) consider clinicians' ultimate opinion to be an essential component of reports, and more important than descriptive information and rationales for opinions; (2) view forensic and psychological testing as valuable; (3) look for similar but not identical characteristics in juvenile and adult competence evaluations; and (4) consider opinions about maturity to be an important component of competence evaluations in juvenile court.

Courts often request evaluations from mental health clinicians in order to assist them in making various types of legal decisions. For adult defendants, evaluations of adjudicative competence (competence to stand trial) are the most common type of pretrial evaluation, with at least 60,000 of these evaluations occurring annually in the United States (Bonnie & Grisso, 2000). Historically, adjudicative competence was considered irrelevant within the early juvenile justice system. Because the juvenile justice system was designed to be rehabilitative rather than punitive, it was considered unnecessary to set a requirement that juvenile defendants had to be able to understand and participate in these proceedings (Grisso, 2005a). However, as the youth justice system has evolved in ways that enable more severe sanctions to be applied to youth, courts have increasingly required that adolescents must be competent (Grisso, 2005a). Thus, requests for juvenile competence evaluations have increased (Redding & Frost, 2001; Grisso, 2005a; Grisso & Quinlan, 2005; Kruh, Sullivan, Ellis, Lexcen, & McClellan, 2006).

Evaluations of juveniles' and adults' competence tend to be very influential to the courts. Research indicates that courts often defer to the opinions of mental health evaluators, with court-clinician agreement rates often exceeding 90% (Kruh et al.,

2006; Skeem & Golding, 1998; Zapf, Hubbard, Cooper, Wheelles, & Ronan, 2004). Despite this heavy court reliance on competence evaluations, concerns have been raised regarding the quality of these evaluations (e.g., Grisso, 2003; Skeem & Golding, 1998).

A key criticism, commonly made in the past, was that competence evaluations failed to properly address legal standards. In particular, while legal standards of competence focus on whether a defendant has impaired legal capacities as a result of mental health issues (*Dusky v. United States*, 1960; *Drope v. Missouri*, 1975; Grisso, 2003), historically, mental health clinicians often ignored or confused these legal standards, and sometimes simply equated mental illness with incompetence (Hess & Thomas, 1963; McGarry, 1965; Roesch & Golding, 1980).

Over the past several decades, there have been significant efforts to improve the quality of competence evaluations. Grisso's functional model for evaluating competence has been very influential in emphasizing the need for competence evaluations to be closely tied to relevant legal standards (Grisso, 2003, 2005a). Also, to help ensure that these evaluations have the proper scope, a number of competence instruments have been developed (Grisso, 2003; Zapf & Viljoen, 2003). Within the

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broader field of forensic psychology, professional standards have been developed (Committee on Ethical Guidelines for Forensic Psychologists, 1991),¹ and there has been enormous growth in specialized forensic training programs and forensic credentialing processes, which provide training on conducting these types of evaluations (Otto & Heilbrun, 2002).

More recent surveys indicate that most forensic mental health clinicians now agree that, in evaluating defendants' competence, it is essential to not only examine a defendant's psychopathology, but also his or her legal capacities. In 1996, Borum and Grisso surveyed board-certified forensic psychologists and forensic psychiatrists, and found that over 90% believed that it was essential to describe particular functional legal capacities in evaluations of criminal defendants' competence. Also, over 90% of respondents believed it was essential or recommended to describe causal links between clinical factors and competence-related legal capacities. More recently, Ryba, Cooper, and Zapf (2003a) found that forensic psychologists also consider these components to be essential or recommended in juvenile competence evaluations.

However, gaps remain between these aspirations and actual practices (Grisso, 2003; Nicholson & Norwood, 2000; Skeem & Golding, 1998). Specifically, while most competence reports describe adult defendants' basic legal capacities, some types of legal capacities (e.g., decision-making capacities) are not routinely addressed in reports (Heilbrun & Collins, 1995; Robbins, Waters, & Herbert, 1997; Skeem, Golding, Cohn, & Berge, 1998; Zapf et al., 2004). Also, few adult competence reports document links between any observed deficits in legal capacities and psychopathology, and few reports include forensically-relevant testing (Borum & Grisso, 1995; Heilbrun & Collins, 1995; Robbins et al., 1997; Skeem & Golding, 1998). Although we know much less about juvenile competence evaluations, recent research has documented similar limitations in them (Christy, Douglas, Otto, & Petrila, 2004).

This body of research on clinical views and practices is important in evaluating the quality and

usefulness of competence evaluations. However, it is also essential to understand the views of the judges who request and rely on these evaluations. Unlike non-forensic evaluations, competence evaluations are written specifically for judges and courts, with the goal of informing legal decision-making, as it is the courts, and not clinicians, who must ultimately determine whether a defendant is competent or not. At this time, we do not have a clear sense of what judges look for in these evaluations. Knowledge of the factors that judges consider to be essential components of competence evaluations may help us to better identify areas in which improvements in clinical practices are needed. In addition, examining judges' views may enable us to develop a better understanding of possible differences in the views of mental health professionals and judges so that efforts can be made to resolve these differences.

There is reason to believe that judges may consider different criteria to be important features of competence evaluations than psychologists. As described by a number of scholars, there are important philosophical differences in the field of psychology and law (Grisso, 1987, 2003; Haney, 1980; Heilbrun, 1992; Melton, Petrila, Poythress, & Slobogin, 1997; Ogloff & Finkelman, 1999; Tomkins & Oursland, 1991). For instance, whereas the law emphasizes certainty in decision-making, psychologists are trained to present the evidence for and against a particular conclusion (e.g., Haney, 1980). As such, one could hypothesize that judges may seek definitive opinions in competence evaluations, including ultimate opinions about whether a particular defendant is competent, and perhaps consider descriptive information as less essential. Also, while the law relies heavily on precedent, psychology emphasizes current knowledge and empirical findings (e.g., Haney, 1980). Therefore, psychologists might potentially place more value on empirically-supported psychological and forensic testing methods than judges, who may be satisfied with, and possibly even prefer, traditional clinical approaches (Bartol & Bartol, 2004).

In addition to understanding possible differences between judges' and mental health professionals' views about key components of competence evaluations, it is also important to understand if judges look for different criteria in juvenile and adult competence evaluations. Because competence

¹ These guidelines are currently in the process of being revised and updated (Committee on the Revision of the Specialty Guidelines for Forensic Psychology, retrieved from www.apa.org on June 5, 2007).

standards for juvenile court are often interpreted to be similar to competence standards for criminal court, mental health experts such as Grisso note that juvenile competence reports should include many of the same basic components as adult competence evaluations, such as a thorough examination of functional legal capacities (Grisso, 2005a; see also Barnum, 2000). However, juvenile competence evaluations must also go beyond this adult-based framework and carefully consider relevant developmental issues, such as whether normal, age-appropriate developmental immaturity may contribute to any observed legal deficits (Grisso, 2005a; Oberlander, Goldstein, & Ho, 2001).

Among psychologists, there appears to be considerable support for this notion that maturity is an important consideration in juvenile competence evaluations, with over 85% of forensic psychologists reporting that opinions about maturity are an essential or recommended component of juvenile competence evaluations (Ryba et al., 2003a). However, at present, it remains to be seen whether judges believe opinions about maturity are important in juvenile competence evaluations, and if they believe that juvenile competence evaluations should differ in any other ways from adult competence evaluations.

Given these gaps in knowledge, the present study examined judges' views about essential components of juvenile and adult competence evaluations, and tested whether judges look for similar criteria in these evaluations. In addition, this study tested whether the characteristics of judges, such as years of experience, affected their views about essential components of competence evaluations, as well as whether there were any jurisdictional differences in judges' views.

METHOD

Participants

Rather than surveying judges from a single jurisdiction, a random sample of juvenile and criminal court judges from seven states were selected from the listings of the Bureau of National Affairs' *Directory of State and Federal Courts, Judges, and Clerks* (King & Miller, 2005). Judges were sampled from the following states: Arizona, Arkansas,

Colorado, Connecticut, Hawaii, Illinois, and Texas. These particular states were chosen because the listings available for them provided sufficient information to identify judges that presided over juvenile courts or adult criminal courts. This was important because we wished to survey respondents about competence evaluations in the type of court they presided over. Specifically, we surveyed juvenile court judges about competence evaluations of juveniles in juvenile court, and criminal court judges about competence evaluations of juveniles or adults in criminal court. Also, by including these seven states we were able to test possible state differences in how judges rated the importance of various criteria (described further below). This study was part of a larger study which examined legal professionals' views about legal standards of competence (Viljoen & Wingrove, 2007).

In total, surveys were sent to 750 judges. This included 250 juvenile court judges, who were asked about competence evaluations of adolescents adjudicated in juvenile court; 250 criminal court judges, who were asked about competence evaluations of adolescents adjudicated in criminal court; and an additional 250 criminal court judges, who were asked about competence evaluations of adults tried in criminal court. In total, 177 surveys were returned completed, making the overall response rate 24.5% once undeliverable surveys ($N = 29$) were excluded. This response rate is considered moderate based on academic surveys, and is comparable to other surveys of judges (Baruch, 1999; Díaz de rada, 2005; Salekin, Rogers, & Ustad, 2001; Salekin, Yff, Neumann, Leisctico, & Zalot, 2002). Eleven participants were excluded due to substantial missing data, making the final sample size 166.

The majority of judges in the sample were male ($N = 134$, 82.7%), and were of European American descent ($N = 129$, 79.6%). However, 8.0% ($N = 13$) of judges were Hispanic, 4.9% were African American ($N = 8$), 4.3% were Asian or Pacific Islander ($N = 7$), and 3.1% were from other ethnic/racial minority groups ($N = 5$). Judges were, on average, approximately 55.42 years old ($SD = 7.41$), with 27.09 years of experience ($SD = 8.73$). In total, 19 of the respondents resided in Arizona, 23 in Arkansas, 11 in Colorado, 8 in Connecticut, 11 in Hawaii, 16 in Illinois, and 78 from Texas. Nearly all of the judges in this study indicated that they had

ordered one or more competence evaluations of defendants, including 98.1% ($N = 51$) juvenile court judges and 95.6% ($N = 108$) criminal court judges. Approximately one-quarter of judges indicated that they had attended a training session on competence ($N = 38$, 23.3%).

Competence Evaluation Survey

To enable comparisons between judges and mental health clinicians, judges were surveyed using the Competence Evaluation Survey used by Ryba et al. (2003a) in their survey of forensic psychologists (see Appendix for a copy of the components included in the survey). This survey was originally developed by Borum and Grisso (1996), but was modified by Ryba et al. (2003a). Eleven of the items on Ryba et al.'s survey were derived in exact form from Borum's and Grisso's survey (1996); an additional three items were also derived from Borum and Grisso but were modified slightly. Ryba et al. added four new items that were not in Borum's and Grisso's survey such as items pertaining to maturity.

The Competence Evaluation Survey (Ryba et al., 2003a) includes 17 different possible components of competence evaluations, such as "current mental status," "medical history," "understanding of charges or penalties," "capacity to participate with attorney," "mental illness opinion," "maturity opinion," "ultimate opinion," and "forensic testing" (see Appendix). For each of these components, respondents are provided with a definition of that component. For instance, for the "forensic testing" element, respondents are given the following definition:

Forensic testing: Use and reporting of forensic test instruments for assessing competency to stand trial. Forensic test instruments are designed specifically for assessing legally relevant capacities issues, while psychological instruments test general psychological functioning.

Respondents were asked to rate whether each report component was "essential" (defined as "must include; exclusion would be unacceptable"); "recommended" (defined as "not essential, but would be found in better forensic reports"); "optional"

(defined as "inclusion would not affect overall report quality"); or "contraindicated" (defined as "inclusion would negatively influence report quality"). The same list of components was given to all respondents. However, as described earlier, juvenile court judges were asked to rate how important these components were for competence evaluations of juveniles adjudicated in juvenile court, whereas criminal court judges were asked to complete these ratings for competence evaluations of either adults or juveniles adjudicated in criminal court. After completing the Competence Evaluation Survey, respondents were asked demographic questions, such as their age.

Differences in State Legislation Pertaining to Competence Evaluations

To inform hypotheses about possible state differences in judges' ratings of report components, we reviewed statutes and case law relevant to competence evaluations. This was done separately for each of the states from which judges were surveyed (i.e., Arizona, Arkansas, Colorado, Connecticut, Hawaii, Illinois, and Texas). Based on this law review, the states surveyed appear to differ in three significant ways that could impact how judges rate the importance of various report components.

First, some states, such as Arizona, Colorado, and Texas (Ariz. Revis. Stat. Ann. § 8-291.01, 2007; Colo. Rev. Stat. Ann. § 16-8-102(3), 2007; Tex. Fam. Code. Ann. § 55.31–32, 2007),² require that the competence evaluation provide an ultimate opinion regarding competence, whereas other states do not establish such a requirement. Therefore, judges in states that require ultimate opinions may be more likely than other judges to rate ultimate opinions as an essential component of evaluations.

Second, states from which judges were surveyed vary in terms of how much emphasis they place on evaluations of mental illness/mental retardation. Some states, such as Arkansas and Colorado (Ark. Code. Ann. § 5-2-302, 2006; Colo. Rev. Stat. Ann. § 16-8-102(3), 2007), specify that criminal defendants can only be deemed incompetent if their impaired

² In Texas, evaluators "must state an opinion on a defendant's competency or incompetency to stand trial or explain why the expert is unable to state such an opinion" (Tex. Fam. Code. Ann. § 55.31–32, 2007).

legal capacities stem from mental illness and/or mental retardation, whereas legislation in other states appear less restrictive. This could affect the importance that judges place on mental illness factors in the context of competence evaluations (e.g., current mental status and mental illness opinions).

Third, the states from which judges were surveyed appear to differ in terms of whether developmental immaturity is explicitly recognized as a basis for findings of incompetence. Research has indicated that adolescents may have limited competence-related capacities due to normal, developmental immaturity (Grisso et al., 2003). However, at this point, many states do not explicitly recognize developmental immaturity as a legitimate basis for a finding of incompetence (Grisso, 2005a; Redding & Frost, 2001). Among the states from which judges were surveyed, Arizona appears to recognize developmental immaturity as a basis for a finding of incompetence (*In re Hyrum H.*, 2006). Also, in Arkansas, youth aged 13 and under who are charged with murder are presumed to be incompetent to proceed with adjudication, presumably due to their developmental stage (Ark. Code. Ann. § 9-27-502, 2007). This could mean that judges in Arizona and Arkansas are more likely to rate maturity opinions as essential. On the other hand, it is possible that jurisdictions may consider maturity factors even without an explicit mandate to do so (see Grisso, 2005a).

Data Analysis

Analyses proceeded in a stepwise fashion. In the first set of analyses, we examined descriptive ratings of the importance of various components of competence evaluations. Next, we tested whether significant differences emerged in items rated as "essential" in competence evaluations of youth adjudicated in juvenile court, youth adjudicated in criminal court, and adults adjudicated in criminal court using chi-square analyses. Logistic regression was used to examine if demographic characteristics of judges (i.e., gender, ethnicity, years of experience, completion of training program on competence evaluations) predicted which items were rated as essential. Finally, we tested whether any state differences emerged in ratings.

RESULTS

Ratings of Importance of Components

In Tables 1 and 2, judges' ratings of the importance of various components of competence evaluations for juveniles adjudicated in juvenile court ($N = 52$), juveniles adjudicated in criminal court ($N = 48$), and adults adjudicated in criminal court ($N = 66$) are presented. To help enable comparisons with mental health professionals, we have included figures from the Ryba et al. (2003a) survey of forensic psychologists about juvenile competence evaluations, and Borum's and Grisso's (1996) survey of forensic psychologists and psychiatrists about adult competence evaluations. Like Borum and Grisso (1996) and Ryba et al. (2003a), we considered respondents to have reached a consensus that a component was "essential" when it was rated as "essential" by 70% or more respondents. If the sum of a component's ratings as "essential" or "recommended" reached at least 70% that item was considered "important."

Among our sample of judges, a consensus was achieved that four types of report components were "essential" for juveniles adjudicated in juvenile court, juveniles adjudicated in criminal court, and adults adjudicated in criminal court; these components included mental illness opinion, opinions about competence to stand trial abilities, ultimate opinions, and current mental status. Also, for juveniles adjudicated in criminal court, consensus was achieved that understanding of charges or penalties was "essential;" this component very nearly reached the cut-off as "essential" for juveniles adjudicated in juvenile court and adults adjudicated in criminal court.

A number of components were rated as "important" for juveniles adjudicated in juvenile court, juveniles adjudicated in criminal court, and adults adjudicated in criminal court, although they were not considered "essential." They included current status in other settings, medical history, mental illness/mental retardation/immaturity rationale, explicit reference to the legal standard, understanding of the trial process, capacity to participate with attorney, causal explanation, psychological testing, and forensic testing. Opinions about maturity were considered important for juveniles adjudicated in

Table 1
Judges' Ratings (in Percentages) of the Importance of Components of Juvenile Competence Evaluations

Report Component	Judges in Present Study						Forensic Psychologists (Ryba et al., 2003a)					
	Juveniles Adjudicated in Juvenile Court (N = 52)			Juveniles Adjudicated in Criminal Court (N = 48)								
	E	R	O	C	E	R	O	C	E	R	O	C
<i>Clinical information</i>												
Current mental status	82.7	17.3	0	0.0	91.7	8.3	0.0	0.0	95.1	3.7	0.0	1.2
Current status in other settings	29.4	47.1	19.6	3.9	31.2	60.4	8.3	0.0	43.9	43.9	11.0	1.2
Medical history	44.2	48.1	7.7	0.0	47.9	45.8	6.2	0.0	67.1	30.5	2.4	0.0
Mental illness opinion	71.2	25.0	3.8	0.0	87.5	12.5	0.0	0.0	86.6	11.0	2.4	0.0
Maturity opinion	26.9	44.2	25.0	3.8	10.4	50.0	39.6	0.0	48.8	39.0	12.2	0.0
Mental illness/mental retardation/ immaturity rationale	55.8	38.5	5.8	0.0	52.1	41.7	6.2	0.0	74.4	19.5	6.1	0.0
Additional clinical opinions	30.8	26.9	23.1	19.2	20.8	43.8	29.2	6.2	9.8	31.7	25.6	32.9
<i>Functional legal capacities</i>												
Reference to legal standard	55.8	25.0	17.3	1.9	60.4	31.2	8.3	0.0	51.2	28.0	19.5	1.2
Understanding of charges/penalties	69.2	17.3	13.5	0.0	70.8	25.0	4.2	0.0	95.1	2.4	1.2	0.0
Understanding of trial process	53.8	34.6	11.5	0.0	52.1	41.7	6.2	0.0	85.4	9.8	3.7	1.2
Capacity to participate	75.0	19.2	3.8	1.9	58.3	37.5	4.2	0.0	90.2	6.1	3.7	0.0
Self-control	15.4	55.8	26.9	1.9	10.4	56.2	31.2	2.1	58.5	32.9	8.5	0.0
CST abilities opinion	76.9	19.2	3.8	0.0	83.3	16.7	0.0	0.0	91.5	2.4	1.2	0.0
<i>Causal explanation</i>												
Ultimate opinion	35.3	37.3	27.5	0.0	17.0	63.8	19.1	0.0	43.9	36.6	17.1	2.4
Testing	75.0	21.2	1.9	1.9	81.2	18.8	0.0	0.0	68.3	12.2	9.8	9.8
Psychological testing	25.0	50.0	25.0	0.0	41.7	43.8	14.6	0.0	43.9	35.4	17.1	2.4
Forensic testing	25.0	58.8	15.7	0.0	33.3	54.2	12.5	0.0	29.3	40.2	28.0	1.2

Note. "E" means essential; "R" means recommended; "O" means optional; "C" means contraindicated. While our survey separately examined reports for juveniles adjudicated in juvenile and juveniles adjudicated in criminal court, Ryba et al. (2003a) did not specifically compare juveniles adjudicated in these two settings.

Table 2
Judges' Ratings (in Percentages) of the Importance of Components of Adult Competence Evaluations

Report Component	Judges in Present Study (N = 66)				Mental Health Professionals (Borum & Grisso, 1996)							
	E	R	O	C	E	R	O	C	E	R	O	C
Clinical information												
Current mental status ^a	86.4	12.1	1.5	0.0	91.1	6.7	2.2	0.0	96.5	3.5	0.0	0.0
Current status in other settings	18.5	56.9	24.6	0.0	18.2	61.4	15.91	4.5	33.3	47.4	19.3	0.0
Medical history ^a	43.9	48.5	6.1	1.5	54.5	34.1	11.4	0.0	33.9	41.1	25.0	0.0
Mental illness opinion	83.3	16.7	0.0	0.0	75.6	22.2	2.2	0.0	75.4	19.3	3.5	1.8
Maturity opinion ^b	10.9	42.2	45.3	1.6	-	-	-	-	-	-	-	-
Mental illness/mental retardation/ immaturity rationale ^a	59.1	33.3	7.6	0.0	24.4	51.1	22.2	2.2	36.8	43.9	15.8	3.5
Additional clinical opinions	9.1	39.4	34.8	16.7	0.0	11.1	20.0	68.9	5.4	1.8	12.5	80.4
Functional legal capacities												
Reference to legal standard	62.1	25.8	12.1	0.0	27.3	36.4	34.1	2.3	28.1	24.6	47.4	0.0
Understanding of charges/penalties	69.7	22.7	7.6	0.0	100.0	0.0	0.0	0.0	94.7	5.3	0.0	0.0
Understanding of trial process ^b	63.6	30.3	6.1	0.0	-	-	-	-	-	-	-	-
Capacity to participate ^b	59.1	36.4	4.5	0.0	-	-	-	-	-	-	-	-
Self-control	15.2	47.0	37.9	0.0	57.8	33.3	8.9	0.0	77.2	19.3	3.5	0.0
CST abilities opinion	80.3	12.1	7.6	0.0	86.7	8.9	4.4	0.0	91.2	7.0	1.8	0.0
Causal explanation ^a												
Ultimate opinion	16.9	47.7	35.4	0.0	62.2	31.1	6.7	0.0	77.2	17.5	5.3	0.0
Testing	86.2	7.7	6.2	0.0	66.7	11.1	8.9	13.3	50.9	22.8	15.8	10.5
Psychological testing	26.2	56.9	16.9	0.0	7.1	35.7	54.8	2.4	21.8	29.1	49.1	0.0
Forensic testing ^b	31.2	46.9	20.3	1.6	-	-	-	-	-	-	-	-

Note. "E" means essential; "R" means recommended; "O" means optional; "C" means contraindicated. Items marked with "a" were included in Borum's and Grisso's Survey, but were modified slightly by Ryba et al. (2003a). Items marked with "b" were not included in Borum's and Grisso's Survey, or were modified significantly so that a comparison cannot be made.

juvenile court but not for juveniles adjudicated in criminal court, or for adults adjudicated in criminal court. Additional clinical opinions did not reach the threshold for importance for any type of defendant.

Comparison of Importance Ratings for Juvenile and Adult Evaluations

Based on chi-square tests, we examined if there were any significant differences in the items rated as essential for juveniles tried in juvenile court, juveniles tried in criminal court, and adults tried in criminal court. There were no significant differences in ratings for evaluations of juveniles adjudicated in criminal court and adults adjudicated in criminal court, suggesting that judges in criminal court look for the same components in competence evaluations regardless of whether the defendant is a youth or adult. For instance, judges were not any more likely to rate opinions about maturity as essential for juveniles in criminal court than for adults in criminal court.

However, some differences emerged in how important various report components were rated for adolescents in juvenile court and adults/adolescents in criminal court. Judges were more likely to rate opinions about maturity, $\chi^2 (1, N = 118) = 4.95, p = .026$, additional clinical opinions that were not directly relevant to competence, $\chi^2 (1, N = 118) = 9.01, p = .003$, and causal explanations of links between legal capacities and clinical/developmental status, $\chi^2 (1, N = 118) = 5.14, p = .023$, as essential for juveniles adjudicated in juvenile court compared to adults adjudicated in criminal court. Also, judges were more likely to rate opinions about maturity, $\chi^2 (1, N = 134) = 4.42, p = .036$, and causal explanations, $\chi^2 (1, N = 134) = 4.19, p = .041$, as essential for juveniles in juvenile court compared to juveniles in criminal court. In contrast, judges were less likely to rate mental illness opinions, $\chi^2 (1, N = 134) = 4.02, p = .045$, as essential for juveniles adjudicated in juvenile court compared to juveniles adjudicated in criminal court.

Judges' Characteristics and Importance Ratings

Hierarchical logistic regression analyses were used to examine if demographic characteristics of each judge, including their years of experience (at

or above the mean of 27.08 years of experience vs. below this mean), and whether each judge had attended a training session on competence predicted if he or she rated an item as "essential." Because we found some significant differences in importance ratings for evaluations in juvenile and criminal court, we controlled survey version (adolescents in juvenile court vs. adolescents/adults in criminal court) in the first step of the logistic regression analyses. Judges with less than 27 years of experience were more likely to rate forensic testing as essential than those judges with 27 or more years of experience, $B = .93, S.E. = .37, Wald = 6.32, p = .012, O.R. = 0.39$. Also, there was a trend where judges who had attended training on competence were more likely to rate it as essential for reports to include a rationale about mental illness/mental retardation/immaturity, $B = .71, S.E. = .40, Wald = 3.24, p = .072, O.R. = 2.04$.

State Differences in Importance Ratings

Hierarchical logistic regression analyses were used to examine if there were state differences in the frequency that judges rated particular components as "essential". In these analyses, we controlled survey version (adolescents in juvenile court vs. adolescents/adults in criminal court) in the first step of the logistic regression. First, we tested whether judges from Arizona, Colorado, and Texas were more likely to rate ultimate opinions as essential than judges in other states (Arizona/Colorado/Texas vs. other states) because legislation in these states require that ultimate opinions be provided in competence evaluations. Second, we tested whether judges from Arkansas and Colorado, were more likely to rate current mental status, mental illness opinion, and causal explanations as more important than judges in other states (Arkansas/Colorado vs. other states), as legislation in these states is more explicit in requiring that incompetence must stem from mental illness. Finally, we tested whether there were any state differences in those judges who rated opinions about maturity as essential (Arkansas vs. other states, Arizona vs. other states, Illinois vs. other states, Texas vs. other states, Arkansas/Arizona v. other states).³ Results indicated that there were no state

³ We did not compare judges from Connecticut, Hawaii, and Colorado to judges from other states since there were relatively few participants from those states.

differences on ratings in any of these areas. This suggests that there is a fair degree of consistency across states in terms of how these components were rated despite differences in relevant legislation.

DISCUSSION

Although competence evaluations are written for courts with the goal of informing legal decision-making, no research has examined what information judges consider essential in these evaluations. To address this gap, this study surveyed judges in seven states about the importance of various possible competence report components for juveniles adjudicated in juvenile court, juveniles adjudicated in criminal court, and adults adjudicated in criminal court. Our results indicate that judges: (1) consider clinicians' opinions to be more essential than descriptive information and rationales for opinions; (2) view forensic and psychological testing as valuable; (3) look for similar but not identical characteristics in juvenile and adult competence evaluations; and (4) consider opinions about maturity to be an important component of juvenile court competence evaluations. These findings are discussed in greater detail below.

Judges Consider Opinions to Be More Essential than Descriptions

Based on our results, judges appear to consider clinicians' opinions to be more important components of competence reports than descriptive information and rationales for opinions. Specifically, of all the components considered by judges, an ultimate opinion about competence, along with penultimate opinions about the presence of mental illness and legal deficits were rated as the most essential components of reports. In contrast, descriptions of functional legal capacities and possible causal explanations of legal deficits were less likely to be rated as essential, although they were still considered relatively important.

The high value placed on ultimate opinions is not simply a reflection of legal requirements. Judges in states which do *not* require evaluators to provide ultimate opinions were just as likely to rate ultimate opinions as essential as judges in states which *do*

require evaluators to provide ultimate opinions (i.e., Arizona, Texas). Research has reported that forensic mental health clinicians have more mixed views about providing ultimate opinions, with some clinicians rating these components as optional or contraindicated (Borum & Grisso, 1996; Ryba et al., 2003a). Also, a number of scholars have argued that competence reports should not include ultimate opinions because this is a moral and legal issue which falls outside the purview of psychologists (Melton et al., 1997; Tillbrook, Mumley, & Grisso, 2003).

Judges' tendency to consider bottom line opinions to be more important than descriptive and explanatory information could arise from several sources. First, this could reflect a general philosophical stance within the law. In particular, compared to psychology, the law is more prescriptive than descriptive, and focuses on definite rather than probabilistic answers (Haney, 1980). Second, judges' focus on opinions regarding competence may reflect a desire or tendency to defer to clinicians. Research has found extremely high rates of correspondence between judges' and mental health clinicians' views in both adult and juvenile competence evaluations (Kruh et al., 2006; Zapf et al., 2004), leading some to suggest that judges abdicate their responsibility (Zapf et al., 2004). Another possibility is that judges' ratings of the importance of various components of competence evaluations, including the lower ratings that they give to descriptive and explanatory information, may simply reflect the types of reports they have been exposed to. Competence evaluations often fail to describe functional legal capacities or links between legal capacities and psychopathology (Christy et al., 2004; Robbins et al., 1997; Skeem et al., 1998; Zapf et al., 2004). Therefore, by failing to consistently include these components, judges may come to believe these descriptive components are not as essential.

While many judges did not consider it essential that clinicians provide descriptive information or explain how they arrived at their conclusions, psychological practice standards clearly emphasize the need to include this information (Committee on the Revision of the Ethical Guidelines for Forensic Psychology, 2006; Grisso, 1998, 2003), as do statutes and case law (e.g., Ark. Code. Ann. § 5-2-305, 2006; Ariz. Revis. Stat. Ann. § 13-4509, 2007; Colo. Rev. Stat. Ann. § 16-8-106, 2007; 725 Ill. Comp. Stat.

Ann. 5/104-15, 2007; Tex. Code Crim. Proc. Ann. art. 46B.025, 2007). For instance, in *People v. Bennett* (1987) a report was found to be insufficient because it did not explain “how diagnoses were obtained or delineate facts upon which conclusions were based” (*People v. Bennett*, 1987).

Therefore, psychologists have an obligation to include descriptive information and rationales in reports. Where possible, psychologists should also communicate the importance of these report components so that judges might develop appropriately rigorous expectations of reports. In our results, we found that judges who had attended training on competence were more likely than other judges to believe it was essential to include a rationale about opinions in evaluations, suggesting that training may elevate expectations regarding competence evaluations.

Judges Consider Forensic and Psychological Testing to Be Valuable

Our results indicate that judges consider forensic and psychological testing to be an important component of competence evaluations. Specifically, over 70% of judges reported that forensic testing and psychological testing was essential or recommended for competence evaluations of juveniles and adults. This support for testing was higher than we predicted, and provides a strong rationale to include testing in evaluations, especially as experts within the field of forensic psychology also highlight the potential value of appropriate and relevant testing (e.g., Grisso, 2003; Nicholson & Norwood, 2000).

Despite such recommendations, past research indicates that: (1) relatively few psychologists included testing in their evaluations; and (2) when testing was used, it was often *general psychological* tests (e.g., personality and intellectual tests), which may not be directly relevant to legal issues (Borum & Grisso, 1995; Nicholson & Norwood, 2000). As a result, experts have emphasized the importance of legally-relevant testing, particularly specialized *forensic* tests. While judges in this study rated general psychological testing and specialized forensic testing as similarly important, newer judges were significantly more likely than older, more experienced judges to rate forensic testing as essential, possibly reflecting changes in attitudes or exposure to testing.

Judges Look for Similar Characteristics in Juvenile and Adult Competence Evaluations

In general, results indicated that judges look for similar characteristics in competence evaluations of juveniles and adults; however, judges rated opinions about maturity as more important in juvenile court evaluations, as discussed below. Also, they rated additional clinical opinions about issues that are not directly relevant to competence (e.g. general treatment needs) as more important in juvenile court evaluations than those in criminal court, although it was still seen as less important than other report components. This greater focus on additional clinical opinions in juvenile court could reflect the more rehabilitative philosophy of the juvenile court, in that some judges may see a primary goal of juvenile court evaluations as providing a description of youths' overall functioning and treatment needs, regardless of whether the particular evaluation is a competence evaluation or some other type of evaluation.

However, clinicians should use caution in examining broader clinical issues if they do not have a specific mandate to do so. Professional practice guidelines and ethical principles emphasize that clinicians must not offer opinions on matters that are not directly relevant to legal issues, as this information may be misused or might blur the purpose of evaluations (Grisso, 1998; Committee on the Revision of the Ethical Guidelines for Forensic Psychology, 2006).

Opinions About Juveniles' Maturity Were Generally Considered Important

This study indicated that opinions about maturity were generally considered an important component of competence evaluations in juvenile court. Over 70% of judges rated this component as essential or recommended of juveniles adjudicated in *juvenile* court. This can be interpreted as a sign of encouragement for psychologists to carefully attend to maturity in their evaluations. Furthermore, although Arizona appears to more strongly recognize developmental immaturity as a basis for findings of incompetence than do the other states from which judges were surveyed (*In re Hyrum H.*, 2006), we did not find any state differences in the importance judges place on maturity opinions, suggesting that judges may

consider this factor even without an explicit mandate to do so (see also Grisso, 2005a).

On the other hand, our results suggest that judges are less likely than psychologists to view maturity opinions as essential. Ryba et al. (2003a) found that 49% of forensic psychologists rated opinions about maturity as essential in juvenile competence evaluations. However, in our study, 26% of judges rated this as essential in evaluations of juveniles adjudicated in juvenile court and 10% rated it essential for juveniles adjudicated in criminal court. Also, in another study, which focused on legal professionals' opinions about legal standards and included judges in the present sample as well as attorneys, we found that judges and attorneys rated developmental immaturity to be moderately important to juveniles' competence but less important than mental illnesses or cognitive impairments (Viljoen & Wingrove, 2007). Therefore, it is important for social scientists to communicate research findings to the courts regarding the relevance of developmental maturity to juveniles' competence (e.g., Grisso et al., 2003; Grisso, 2005b). The lesser support for maturity opinions among judges could possibly reflect uncertainty about the meaning of maturity and its relevance. Even among psychologists, maturity has been found to be a difficult concept to define (Ryba, Cooper, & Zapf, 2003b).

Opinions about maturity were less likely to be considered essential for competence evaluations of juveniles adjudicated in *criminal* court than for juveniles adjudicated in *juvenile* court. This could reflect a belief that competence evaluations for juveniles in criminal court should mimic adult competence evaluations. Also, it is possible that criminal court judges, who may only try the occasional transferred youth, have a more limited understanding of the ways in which developmental maturity is relevant to competence than juvenile court judges, given their more limited experience with youth. Regardless, the finding that maturity is considered less relevant for youth in criminal court is somewhat disconcerting, as possible developmental differences between youth and adults may be especially important in this context, given the severe penalties that youth waived to criminal court may face.

Limitations and Future Research Needs

In interpreting these findings, several limitations of this study are important to note. The survey we used was derived from surveys of mental health clinicians (i.e., Borum & Grisso, 1996; Ryba's et al., 2003a), and as such, facilitates comparisons between judges and clinicians. However, it is possible that some of mental health clinicians' beliefs (e.g., views on forensic testing) may have shifted since those surveys were conducted, therefore those surveys may not be entirely representative of current views, limiting our ability to make these comparisons. Also, our survey did not address certain potentially important aspects of competence evaluations, such as situational factors and remediation of incompetent defendants.

While the aim of this study was to help elucidate judges' views of essential components of competence evaluations, we recommend that future research extend this investigation to examine judges' views of other types of forensic evaluations, such as risk assessments or criminal responsibility evaluations. This type of research may not only help us to provide judges with reports that they consider valuable, but also help us to understand potential differences between the fields of psychology and law so that these differences may be more effectively bridged.

APPENDIX DEFINITIONS FOR ELEMENTS OF COMPETENCE REPORTS

Explicit Reference to the Legal Standard for Competency to Stand Trial: A legal citation providing a definition of competence to stand trial in that jurisdiction.

Current Mental Status:^a Information (data) about defendant's current mental status, derived at least in part from direct observation of defendant by examiner (must be a description of mental state at the time of the evaluation). (For example, describing delusions or other symptoms, describing thoughts or thought processes, describing level of intelligence, describing maturity level).

Current Status in Other Settings (if available): Observations about defendant's current mental state as observed by examiner or others in setting other

than the interview (e.g., hospital or jail) in the days just prior to or during the evaluation.

Medical History:^a Statement identifying presence and degree, or absence, of any past or current significant illness or medication use, including alcohol or substance use.

Understanding of Charges or Penalties: Data describing what the defendant understands about the charges or potential penalties.

Understanding of the Trial Process:^b Data describing the defendant's degree of understanding of pleas available to defendants (e.g., guilty, not guilty), how trials proceed, understanding of trial participants.

Capacity to Participate with Attorney:^b Data describing defendant's ability to work with his/her attorney and consider advice of counsel.

Self Control: Data describing defendant's ability to manage his/her behavior or emotion in courtroom.

Mental Illness Opinion: Statement concerning presence and degree, or absence, of current mental illness or mental retardation.

Maturity Opinion:^b Statement regarding defendant's maturity level.

Mental Illness/Mental Retardation/Immaturity Rationale: A description of how the examiner reached an opinion about the presence of mental illness, mental retardation, and/or immaturity.

Competency to Stand Trial Abilities: Statement of examiner's opinion concerning presence, absence, or degree of deficit in abilities relevant for the question of competence to stand trial.

Causal Explanation:^a Description of the connection between deficits in competence abilities and the defendant's clinical/developmental status.

Ultimate Opinion: Report includes the examiner's clinical opinion concerning whether or not the defendant is competent to stand trial.

Additional Clinical Opinions: Report also offers opinions on defendant's current dangerousness and other matters that may be relevant for sentencing, but for which there is no legal (statutory) requirement to address.

Psychological Testing: Use and reporting of intellectual, objective or projective tests/instruments designed for clinical evaluation (e.g., WAIS-R, MMPI, Beck, etc.)

Forensic Testing: Use and reporting of forensic test instruments assessing competency to stand trial.

Forensic test instruments are designed specifically for assessing legally relevant capacities, while psychological instruments test general psychological functioning.

Note. Items marked with "a" were included in Borum's and Grisso's Survey, but were modified slightly by Ryba et al. (2003a). Items marked with "b" were not included in Borum's and Grisso's Survey, or were modified significantly.

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Identification of Critical Items on the Massachusetts Youth Screening Instrument – 2 (MAYSI-2) in Incarcerated Youth

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Previous research has indicated that the Massachusetts Youth Screening Instrument – Second Version (MAYSI-2) has clinical utility in screening and identifying justice-involved youth with mental health problems. In an effort to expand research on the validity of the MAYSI-2, the current study investigated patterns of endorsement on MAYSI-2 items to identify “critical items” that may serve as important indicators of serious mental health problems. Results identified a subset of MAYSI-2 items for male (13 items) and female youth (14 items) that hold promise in identifying youth with serious mental health problems. Gender-specific critical items scales were formed with optimized categorical cut-scores identified which were comparable to the standard MAYSI-2 scale scoring procedures. The critical items scales produced excellent internal consistency and promising predictive validity. Potential clinical applications and steps for further validation of this adjunctive scoring approach are offered.

Mental health professionals and juvenile justice personnel have recognized that youth in the juvenile justice system exhibit considerably high rates of mental health problems that warrant appropriate identification and intervention (Cocozza & Skowrya, 2000; Kazdin, 2000; Shufelt & Cocozza, 2006). Historically, prevalence rates of specific mental health problems were difficult to establish because studies had limitations in methodology, such as varying definitions of mental illness and limited generalizability (see Otto, Greenstein, Johnson, & Friedman, 1992). More recent studies have increased methodologic rigor and used structured diagnostic interviews to obtain prevalence estimates of mental illness among juvenile offenders (see Teplin, Abram, McClelland, Dulcan, & Mericle, 2002; Wasserman, McReynolds, Lucas, Fisher, & Santos, 2002). These studies indicate that approximately 65% of justice-involved youth have a diagnosable mental health disorder. Both studies identified extremely high rates of disruptive behavior and substance use disorders (approximately 40% to 50%). In addition to externalizing problems, more than 20% of male and

female youth were found to suffer from mood and anxiety disorders across the two studies.

At the same time that research has provided further insight into the prevalence of mental health problems, commentators have outlined practice guidelines for screening and assessing justice-involved youth (see Wasserman et al., 2003) and reviewed instruments that are suitable to meet these guidelines (see Grisso & Underwood, 2003; Grisso, Vincent, & Seagrave, 2005). A blue-ribbon panel of mental health professionals with significant experience in juvenile justice (identified as the Consensus Conference - see Wasserman et al., 2003) recommended that mental health screening of justice-involved youth serves two functions: (1) the identification of emergent risk (i.e., medication, current substance use, risk of suicidal or self-injurious behavior) and (2) mental health service needs. In addition, the Consensus Conference recommended, “...using evidence based, scientifically sound screens that are well-validated and reliable” (p. 754). According to the panel, the ideal screening process involves screening procedures

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within 24-hours of admission to address emergent risk and, as early as possible, standardized, empirically-supported screening to determine need for mental health services.

The Massachusetts Youth Screening Inventory – Second Version (MAYSI-2; Grisso & Barnum, 2006) was developed to meet the need for an effective mental health screening tool for use in juvenile justice settings. The MAYSI-2 is a brief (52-item), standardized self-report form evaluating seven mental health problem domains: 1) Alcohol/Drug Use, 2) Angry-Irritable, 3) Depressed-Anxious, 4) Somatic Complaints, 5) Suicide Ideation, 6) Thought Disturbance (males only), and 7) Traumatic Experiences. MAYSI-2 scale scores are intended to serve an alerting function by indicating a “caution” (i.e., a youth warrants a follow-up or monitoring) or “warning” (i.e., youth is endorsing a number of items that warrant immediate assessment to determine need for intervention) for each scale. Caution cut-scores were established by identifying the MAYSI-2 scale score that most closely corresponded to the “clinical significance” cut-score from parallel scales on the Millon Adolescent Clinical Inventory (MACI; Millon, 1993) and the Child Behavior Checklist – Youth Self Report (CBCL-YSR; Achenbach, 1991). “Warning” scores correspond to the cut-score that identifies the top 10% of youths on a given MAYSI-2 scale (see Grisso & Barnum, 2006).¹ The MAYSI-2 developers clearly specify that the instrument is intended for use as a screening instrument only, and stress that results are not equivalent to a mental health diagnosis.

A recent report by Vincent, Grisso, and Terry (2005) noted that the MAYSI-2 has been adopted for use by juvenile justice facilities in 48 states and confirmed international use with a number of language translations completed or in progress. In addition, 35 states were reported to use the MAYSI-

2 system-wide (i.e., used by all state juvenile detention centers). In the MAYSI-2 validation studies (see Grisso & Barnum, 2000; Grisso, Barnum, Fletcher, Cauffman, & Peuschold, 2001), the authors established the instrument’s basic psychometric properties and determined that test results can differ based on age, race, gender, site, and legal status (i.e., charged and awaiting adjudication or adjudicated and awaiting placement).

Other MAYSI-2 studies have focused on replicating basic psychometric properties, scale scale-level scoring (see Cauffman, 2004) and examined MAYSI-2 scale results in relation to legal variables and history of mental health problems. For example, Nordness et al. (2002) documented rates of mental health problems based on MAYSI-2 results from 204 youth in a juvenile detention facility finding that 68% of youth scored above the caution or warning cut-scores on at least one MAYSI-2 scale. Female youth had higher mean scores and were more likely to elevate two or more scales compared to males. Similar results were found by Cauffman (2004) with 81% of female youth and 70% of male youth producing a caution score on at least one MAYSI-2 scale. Focusing specifically on female juvenile offenders, Tille and Rose (2007) found very similar caution score percentages (70% caution score on at least one scale) with higher percentages for female recidivists (77%) versus first-time female offenders (55%). Recently, Cauffman, Lexcen, Goldweber, Shulman, and Grisso (2007) extended the study of gender differences by comparing male and female youth across both juvenile justice and community settings on the five standard MAYSI-2 scales scored for both male and female youth. After controlling for IQ and SES, the authors found significant multivariate main effects for gender and setting as well as a significant gender x setting interaction. Female youth reported significantly greater mental health symptoms on all scales except Alcohol/Drug Use. Detained youth produced significantly higher mean scores on all five scales. The magnitude of the gender differences in the detained sample was greater than the community sample on the Depressed-Anxious, Angry-Irritable, and Suicide Ideation scales.

Archer, Vauter Stredny, Mason, and Arnau (2004) found comparable psychometric properties and offered promising independent support of the

¹ As noted in the MAYSI-2 manual, neither the MACI nor the CBCL-YSR have parallel scales assessing traumatic experiences; therefore, caution and warning cut scores were not established for this scale similar to other MAYSI-2 scales. Additionally, the content of TE items varies from the items on other scales in that the TE items are intended to identify youth who have greater lifetime exposure to traumatic events compared to other youths and are not linked to trauma symptoms per se. The authors recommend that all endorsed TE items receive follow-up.

factor structure of MAYSI-2 in a sample of detained youth. As an independent estimate of convergent validity, Butler, Loney, and Kistner (2007), reported significant positive correlations between MAYSI-2 scales and corresponding MACI scales in a sample of male juvenile offenders. However, the authors questioned the discriminant validity of the MAYSI-2 scales due to the number of significant scale intercorrelations, and limited predictive accuracy of the Angry-Irritable and Suicide Ideation scales in classifying conceptually relevant institutional maladjustment problems (i.e., presence or absence of intensive supervised placements and suicide watch within 90 days of admission).

Using a cluster analytic approach, Stewart and Trupin (2003) examined MAYSI-2 scores from 1,840 youth in state custody and identified three distinct groups: (1) youth with high levels of mental health symptoms, (2) youth with co-occurring mental health and substance abuse symptoms, and (3) youth with low levels of mental health symptoms. Stewart and Trupin found that youth in the mental health groups reported a significantly higher frequency of past mental health treatment and that group membership was associated with referral for specific mental health services and length of sentence. Similar to other MAYSI-2 studies, Stewart and Trupin found that female youth and Caucasian youth were more likely to produce higher MAYSI-2 scores and were more likely to be identified as having high rates of mental health problems. The cluster solution recently was replicated in a female-only sample with additional findings supporting that the mental health clusters resulted in significantly higher levels of trauma-related symptomatology compared to female youth in the low mental health group (Cruise, Marsee, Dandreaux, & DePrato, 2007).

Wasserman et al. (2004) investigated the convergent validity of the MAYSI-2 with the computerized version of the Diagnostic Interview Schedule for Children Version IV (DISC-IV; Shaffer et al., 1996; Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000) known as the Voice DISC-IV (see Wasserman et al., 2003). This study examined associations between the MAYSI-2 and specific psychiatric diagnoses (minus impairment criterion) by investigating homotypic (i.e., MAYSI-2 Alcohol/Drug Use Scale to DISC-IV Substance Use/Dependence diagnosis) and heterotypic (i.e.,

MAYSI-2 Angry-Irritable to DISC-IV Disruptive Behavior Disorders) comparisons. The researchers found generally positive agreement between the MAYSI-2 Alcohol/Drug Use and Suicide Ideation scales and companion Voice DISC diagnostic indicators. Results were less positive for the MAYSI-2 Depressed-Anxious and Angry-Irritable scales suggesting a lack of effective discrimination between internalizing and externalizing psychiatric disorders for these scales. While questioning the accuracy of specific MAYSI-2 scales relating to the presence of the psychiatric disorder, the researchers found high rates of Negative Predictive Power (NPPs ranging from .73 to .95 for homotypic pairings) suggesting that the absence of a MAYSI-2 elevation effectively screens out youth who do not need further assessment.

A few conclusions can be drawn from the current MAYSI-2 research. First, the MAYSI-2 identifies a large percentage of youth as in need of further monitoring or assessment based on scale-level results. Second, female youth endorse higher rates of mental health problems across multiple domains. Third, individual MAYSI-2 scales may operate with differing levels of sensitivity and specificity when scale scores are compared to corresponding psychiatric diagnoses. Thus, existing studies have identified strengths and possible limitations to the scale-level scoring approach – particularly in screening in youth for serious mental health problems. While the MAYSI-2 developers encourage individual systems to establish internal decision-rules regarding the number or severity of scale elevations needed to trigger follow-up, the current scale-level scoring system may overburden limited mental health resources available within most juvenile justice systems. Additionally, lack of consistent discrimination at the scale level may result in juvenile justice personnel having difficulty establishing monitoring/referral decisions and mental health professionals disregarding scale-level results due to the potential for high rates of false-positives. Based on the existing MAYSI-2 literature, the purpose of the current study was to expand on the MAYSI-2 validity research by investigating patterns of MAYSI-2 item endorsement to determine whether a set of “critical” items exists that can effectively screen for serious mental problems in justice-involved male and female youth.

METHOD

Participants

Participant information was obtained from a retrospective case record review of 1,433 youth detained in a secure custody facility in Louisiana who met the age range requirements as identified in the MAYSI-2 manual. The records represented a consecutive sample of youth who entered the state secure custody system during a 12-month period (August 2001 to August 2002). The sample consisted of records from 1,261 male youth (88.0%) and 172 female youth (12.0%) ranging in age from 12 to 17 years ($M = 15.81$, $SD = 1.10$). The sample consisted primarily of Black youth (72.2% of the total sample; 915 male and 119 female), with fewer White youth (26.2% of the total sample 330 male and 46 female), and youth of other races (1.6%).

Procedure/Measures

All study data were obtained by extracting MAYSI-2 item and scale scores, demographics, and mental health variables from archived records. As a standard part of the facility intake assessment process, all youth were administered the MAYSI-2 in a group setting within two to three days of admission. MAYSI-2 items were read out loud to youth in groups containing no more than 10 youth with each youth responding to items on their own copy of the MAYSI-2. MAYSI-2 item and scale scores, demographic variables (i.e., age, gender, race), and follow-up mental health variables were extracted from the youth's mental health record and the MAYSI-2 protocol.

MAYSI-2. The MAYSI-2 (Grisso & Barnum, 2006) is a 52-item self-report screening instrument for youth aged 12 to 17 years. Initial validation of the instrument on 1,279 juvenile delinquents revealed average item-total correlations ranging from .37 to .63 across the MAYSI-2 scales. Alpha coefficients ranged from poor (.61) to excellent (.86), with an acceptable average of .75 across scales. Inter-scale correlations ranged from .24 to .61. The authors reported that the vast majority of MAYSI-2 scales (with the exception of Somatic Complaints) were highly correlated (i.e., r s ranging from .50 to .65) with similar scales from the MACI (Millon, 1993)

and the CBCL-YSR (Achenbach, 1991). In the current study, alpha coefficients for the full sample ranged from .69 to .85, with an average of .78 across scales. These coefficients varied little for male and female youth, with the exception of the Thought Disturbance and Traumatic Experiences scales. Internal consistency for the Thought Disturbance scale (male youth only) was somewhat low (.59). A similarly low alpha coefficient was obtained for the Traumatic Experiences scale for both male (.60) and female youth (.65). Average corrected item-total correlations for each scale ranged from .36 to .70 and were similar across gender. All items correlated .23 or higher with the total score of the scale to which they belonged.

Demographic and Follow-up Mental Health Variables. Demographic variables including race, age, and gender were coded from either the youth's mental health record or the MAYSI-2 protocol. Each youth's record noted whether the youth met the facility classification of seriously mentally ill (SMI). According to the operational parameters used by the facility, the SMI designation refers to a consensus classification made by an assessment team (consisting of a clinical psychologist, a clinical social worker, and psychiatrist) at the end of a 30-day intake assessment process. The SMI designation is assigned to youth who exhibit significant problems in thought, mood, or behavior that impact the youth's ability to adequately function in the secure custody environment without follow-up mental health services. Youth given the SMI designation are automatically assigned to trained mental health counselors and receive specialized mental health services and management throughout their incarceration.

A few caveats warrant mention regarding the SMI classification. The initial designation is offered after the 30-day comprehensive mental health and psychiatric assessment with MAYSI-2 scale results being one test indicator available to the assessment team in making this designation. The classification is not linked to any specific DSM-IV diagnosis (American Psychiatric Association, 1994), but rather denotes a functional benchmark linked to service need. However, facility information indicate youth classified as SMI all received psychiatric services, were diagnosed by the assessment team with a serious Axis I disorder (i.e., Major Depressive Disorder, Bipolar Disorder, Post-Traumatic Stress

Disorder), or had co-occurring Axis I disorders and a substance abuse/dependence disorder. Specific DSM-IV diagnostic information was not noted in each record; however, the classification status (e.g., SMI or non-SMI) was available for each youth and coded from records. Thus, the SMI designation reflects a subset of youth receiving a combination of mental health and psychiatric services based on the functional severity of their mental health problems (similar to the designation of Serious Emotional Disturbance-SED by Cocozza and Skowrya, 2000) and are the group in greatest need of immediate identification during the mental health screening process.

RESULTS

To identify MAYSI-2 critical items, we first conducted a series of hierarchical logistic regression

analyses (separately for male and female youth) using race and each MAYSI-2 item to predict SMI status. Separate analyses were conducted for male and female youth given that the base rate of SMI varied by gender and race (Black males = 102/915, 11.1%; White males = 85/330, 25.8%; Black females = 31/119, 26.1%; White females = 28/46, 60.9%). Race was entered on Step 1 and the MAYSI-2 item entered on Step 2. Items were identified as “critical” when the MAYSI-2 item remained a significant predictor of SMI after accounting for the predictive utility associated with race. The regression analyses were completed so that the item-level odds ratio associated with Step 2 indicated the likelihood of a “yes” endorsement by youth identified as SMI compared to those who were not identified as SMI. This method resulted in the identification of 13 critical items for male youth and 14 critical items for female youth (see Table 1) using significant odds ratio thresholds of ≥ 3.00 and ≥ 4.00 for male and

Table 1
Critical Items for Males and Females

Item	Scale	Odds Ratio	
		Male	Female
Item 3. nervous/worried	DA	3.10	5.06
Item 4. problems concentrating	N/A	3.09	2.96
Item 5. fighting	N/A	1.88	4.42
Item 6. easily upset	AD	2.16	4.42
Item 8. jumpy or hyper	AI	3.15	3.18
Item 9. seen things	TD	3.64	4.42
Item 10. wish you hadn't	AD	2.77	4.42
Item 11. wished you were dead	SI	3.87	4.10
Item 14. nightmares	DA	3.92	2.32
Item 16. life not worth living	SI	4.06	4.99
Item 18. felt like hurting yourself	SI	5.83	4.71
Item 20. heard voices	TD	4.58	3.99
Item 22. felt like killing yourself	SI	4.88	4.59
Item 27. felt shaky	SC	1.88	4.91
Item 35. felt angry	AI/DA	2.10	4.58
Item 38. can't do anything right	N/A	3.00	5.76
Item 47. given up hope for life	DA/SI	4.13	9.78
Item 50. raped/danger of rape	N/A/TE	4.98	2.96

Note. Items are truncated. N/A = item not on a scale; DA = Depressed-Anxious; AD = Alcohol/Drug; AI = Angry-Irritable; TD = Thought Disturbance; SI = Suicide Ideation; SC = Somatic Complaints. Italicized items were identified as “critical” based on odds ratios > 3.0 for males and > 4.0 for females. (Item 20 was selected for females based on rounding).

female youth respectively. The critical items for males were drawn from four MAYSI-2 scales (i.e., Depressed-Anxious, Angry-Irritable, Suicide Ideation, and Thought Disturbance), and three items (4, 38, and 50) that were not on a scale. Critical items for female youth were also drawn from these four scales; however, additional items were identified from the Alcohol/Drug Use and Somatic Complaints scales with two items (5 and 38) not included on a standard scale. There was substantial overlap in the critical items identified for male and female youth with nine MAYSI-2 items appearing for both genders. Four items were unique to male youth and five items were unique to female youth.

Next, the critical items for male and female youth were summed separately to form gender-specific critical items scales (hereafter referred to as MCI and FCI). MCI scores for male youth ranged from 0 to 12, with a mean of 2.12 ($SD = 2.57$). Scores for female youth ranged from 0 to 13, with a mean of

4.97 ($SD = 3.45$) on the FCI. Internal consistency for both scales were high and similar across gender (MCI = .81; FCI = .82). Item-total correlations for the MCI ranged from .18 to .61, and .17 to .71 for the FCI.

A series of logistic regressions were conducted using the CI scale scores to predict SMI status for White and Black male and female youth to identify possible cut scores for the prediction of SMI status. As expected, all four regression models were significant (White male youth $\chi^2 = 55.02$, $p < .0001$, OR = 1.52; Black male youth $\chi^2 = 70.17$, $p < .0001$, OR = 1.33; White female youth $\chi^2 = 12.47$, $p < .001$, OR = 1.93; Black female youth $\chi^2 = 15.30$, $p < .001$, OR = 1.33). Within each logistic regression, the probability of SMI classification and associated test utility estimates were calculated for each 1-point CI scale interval. These calculations facilitated identification of optimized cut scores for race within gender (see Table 2).

Table 2

Test Utility Estimates for Critical Items Scale for Male and Female Youth by Race

	Cut Score	SN	SP	PPP	NPP	HR
Male						
All	≥ 4	.52	.84	.36	.91	.79
White		.58	.84	.56	.85	.77
Black		.47	.84	.27	.93	.80
All	≥ 6	.36	.92	.45	.89	.84
White		.41	.93	.67	.82	.80
Black		.32	.92	.34	.92	.85
Female						
All	≥ 4	.88	.58	.54	.90	.69
White		.93	.78	.87	.88	.87
Black		.84	.55	.39	.91	.62
All	≥ 6	.69	.79	.65	.82	.76
White		.75	.89	.91	.70	.80
Black		.65	.77	.50	.86	.74

Note. Percentages are rounded up to the nearest tenth. SN = Sensitivity: youth correctly classified as SMI; SP = Specificity: youth correctly classified as Non-SMI; PPP = Positive Predictive Power: probability that a youth identified as SMI is SMI; NPP = Negative Predictive Power: probability that a youth identified as Non-SMI is Non-SMI; HR = Hit Rate.

Consistent with traditional MAYSI-2 scale scoring, an optimized two-level cut-score (≥ 4 and ≥ 6) was identified for both scales. Focusing on the MCI, the lower threshold (4) resulted in high rates of specificity and negative predictive power (NPPs of .84 and .94, respectively) that varied little across race. Sensitivity and positive predictive power (PPP) were somewhat lower but still within an acceptable range for the lower threshold score (.52 and .36, respectively). Accuracy of the lower threshold cut score was diminished for Black male youth (PPP = .27). At the upper cut-score, high specificity and NPP was maintained (.92 and .89, respectively) and varied little across race. Additionally, decreases in sensitivity for the upper cut score were offset by noticeable gains in PPP (see Table 2).

The test utility results for the FCI consistently resulted in higher values at both the lower and upper cut scores compared to the MCI. At the lower cut score, sensitivity was much higher for female youth but varied across race in terms of accuracy (PPPs = .54, .87, and .39 for All, White, and Black female youth, respectively). While specificity values were somewhat lower, comparable NPPs were obtained that varied little across race. At the upper cut score, noticeable gains were achieved in sensitivity and PPP. Similar to results for the MCI, the upper cut score PPP was lower for Black female youth compared to White female youth (PPP = .91 and .50, respectively) on the FCI. Finally, estimates of specificity and NPP were consistently high (.79 and .82, respectively) and varied little across race.

As a final step in the initial validation of the CI scales, a series of logistic regressions were conducted using the MCI and FCI and standard MAYSI-2 scales to predict SMI status for White and Black, male and female youth. Individual scale regressions were required due to similar items being represented across multiple scales. In each regression, MAYSI-2 categorical scores were used as single predictors of SMI status. For male youth, all MAYSI-2 scales, with the exception of AD, were significant predictors of SMI status (see Table 3). The MCI had the highest odds ratio (3.45, $p < .01$) and produced superior overall classification of SMI and non-SMI male youth at both the lower threshold (similar to caution) and upper threshold (similar to warning) levels for White males (77.2 and 79.7% respectively). Comparable classification results were found for

Black males with the MCI; however, other standard MAYSI-2 scales also performed well in predicting the SMI designation. Across both White and Black males, greatest comparability was found between the MCI and SI scales which is not surprising given the similarity in item-content across the two scales.

A similar result was found comparing the FCI to the standard MAYSI-2 scales scored for female youth. The AD scale continued to be a non-significant predictor of SMI status. However, additional standard MAYSI-2 scales lacked predictive utility for White (SC) and Black (AI) female youth. Relative to the standard MAYSI-2 scales, the FCI resulted in superior performance for White female youth, (OR = 8.70) with the highest obtained correct classification at both the lower threshold (87.0%) and upper threshold (80.4%) levels. The FCI resulted in similar correct classification rates for Black female youth relative to the rates found for male youth but lower correct classification compared to White female youth (lower threshold = 62.2%, upper threshold = 73.9%).

Overall classification rates suggest comparability between the CI scales and standard MAYSI-2 scales but potentially mask an important finding. Focusing specifically on the upper threshold level (similar to warning scores on standard scales), the CI scales correctly classified 41.2% of the White SMI males, 32.4% of the Black SMI males, 75.0% of the White SMI females, and 64.5% of the Black SMI females. In 25 out of 26 comparisons, the upper threshold CI cut scores outperformed the standard MAYSI-2 warning cut scores in the percentage of correct classification of SMI youth while maintaining comparable rates of correct non-SMI classification.

DISCUSSION

The identification of critical items has aided the clinical interpretation of self-report scale findings in the assessment of adult (i.e., Koss & Butcher, 1973; Lachar & Wrobel, 1979) and child and adolescent psychopathology (i.e., Briere, 1996; Reynolds, 1998). A critical items approach has not been investigated for the MAYSI-2 prior to this investigation. Given that prior research has revealed that standard MAYSI-2 scale level results identify a very large proportion of youth as in need of further

Table 3
Logistic Regression Results Predicting SMI Status for Male and Female Youth

Scale	Wald	p	Odds Ratio	95% C.I.	Caution Classification (%)		Warning Classification %		
					Non-SMI	SMI	Non-SMI	SMI	Overall
White Males									
MCI	53.30	<.01	3.45	2.47 – 4.81	84.1	57.6	93.1	41.2	79.7
AD	.02	.86	.97	.69 – 1.37	54.7	42.4	86.1	15.3	67.9
AI	8.99	<.01	1.78	1.22 – 2.59	69.3	51.7	93.5	9.4	71.8
DA	34.10	<.01	3.09	2.11 – 4.50	70.2	65.9	94.7	21.2	75.8
SC	14.31	<.01	2.17	1.45 – 3.24	57.1	62.4	96.3	14.1	75.2
SI	32.58	<.01	2.64	1.89 – 3.68	88.2	41.2	93.1	31.8	77.3
TD	25.61	<.01	2.43	1.72 – 3.42	70.0	57.6	93.1	27.1	76.1
Black Males									
MCI	54.82	<.01	2.54	1.99 – 3.53	83.6	47.1	92.0	32.4	85.4
AD	.03	.87	1.03	.74 - .43	65.7	30.4	93.2	11.8	84.2
AI	38.11	<.01	2.41	1.82 – 3.19	64.9	64.7	93.4	22.5	84.7
DA	44.70	<.01	2.56	1.94 – 3.37	63.3	71.6	91.0	24.5	83.6
SC	12.38	<.01	1.82	1.30 – 2.53	64.0	52.9	96.6	7.8	89.7
SI	41.37	<.01	2.44	1.86 – 3.20	89.9	31.4	94.8	24.5	86.9
TD	40.54	<.01	2.32	1.79 – 2.99	60.4	68.6	87.0	36.3	81.3
White Females									
FCI	16.26	<.01	8.70	3.04 – 24.88	77.8	92.9	86.9	75.0	80.4
AD	2.13	.14	1.89	.80 – 4.47	66.7	57.1	88.9	21.4	47.8
AI	10.05	<.01	6.16	2.00 – 18.94	77.8	78.6	94.4	35.7	58.7
DA	11.40	<.01	5.79	2.09 – 16.03	61.1	85.7	94.4	53.6	69.6
SC	5.75	.02	3.48	1.26 – 9.63	55.6	78.6	94.4	25.0	52.2
SI	9.41	<.01	4.18	1.68 – 10.41	88.9	67.9	88.9	53.6	67.4
Black Females									
FCI	16.60	<.01	3.12	1.81 – 5.40	54.5	83.9	77.3	64.5	73.9
AD	.17	.67	1.16	.58 - 2.33	76.1	19.4	96.6	12.9	74.8
AI	5.03	.02	1.91	1.09 – 3.37	53.4	71.0	87.5	22.6	70.6
DA	8.64	<.01	2.46	1.35 – 4.49	46.6	83.9	86.4	29.0	71.4
SC	9.85	<.01	3.39	1.58 – 7.26	46.6	83.9	95.5	16.1	74.8
SI	7.20	<.01	1.86	1.18 – 2.92	73.9	54.8	79.5	41.9	69.7

Note. MCI = Male Critical Items; AD = Alcohol/Drug; AI = Angry-Irritable; DA = Depressed-Anxious; SC = Somatic Complaints; SI = Suicide Ideation; TD = Thought Disturbance; FCI = Female Critical Items.

monitoring and/or assessment follow-up, we sought to investigate whether a set of MAYSI-2 items exist that were more sensitive to the identification of serious mental health problems. Several steps were taken to identify a set of critical items. First, a series of hierarchical logistic regression analyses were conducted (separately for male and female youth) using race and each MAYSI-2 item to predict SMI status. Separate analyses were conducted for male and female youth given that the base rate of SMI varied by gender and race. This method resulted in the identification of 13 critical items for male youth and 14 critical items for female youth (see Table 1). There was substantial overlap in the identified critical items with nine MAYSI-2 items appearing for both genders. However, four items were unique to male and five items were unique to female youth respectively. A surprising finding was the identification of items that do not load on standard MAYSI-2 scales (Items 4, 5, 38, 50). Thus, this approach allows for a review of MAYSI-2 items that were not included on the standard scales. Additionally, specific Thought Disturbance items can now be interpreted for female youth in the absence of the traditional scale level scoring.

Gender-specific critical item scales were formed by summing the identified items and submitting the scales to additional statistical analyses that tested the ability of each scale to discriminate between youth identified as SMI and those not identified with this designation. The internal consistency estimates of the CI scales are high and vary little across gender. Logistic regression results suggest the CI scales may assist in the classification of youth identified with serious mental health impairment. As summarized in Table 2, test utility estimates for the derived cut-scores indicate that CI scales appear to effectively rule out youth who were not identified as having significant mental health problems. It is noteworthy that across both lower and upper threshold cut-scores, rates of specificity and NPP were consistently high for male youth and varied little by race. Somewhat lower specificity was obtained for female youth at the lower threshold cut-score; however, a noticeable gain was achieved at the upper threshold cut-score. More importantly, CI scale specificity and NPP rates are comparable to those obtained for the standard MAYSI-2 scales (see Grisso & Barnum, 2006).

The CI scale threshold cut-scores correctly identify greater proportions of female youth identified as SMI compared to male youth. Across gender, sensitivity rates decreased, moving from the lower to upper-threshold cut scores; however, accuracy rates (PPP) increased and are comparable to those obtained for the standard MAYSI-2 scales (Grisso & Barnum, 2006). There are several implications of lower sensitivity and PPP for male youth. The lower overall endorsement of critical items, combined with a lower base rate of SMI, likely contributed to lower classification rates. Alternatively, the endorsement of critical items by male youth may reflect emotional distress due to situational difficulties (e.g., legal status and adjustment to the environment) rather than significant psychological difficulties.

We also compared the predictive utility of the gender-specific CI scales against the standard MAYSI-2 scales scored for each gender. Scale categories were used in these analyses to further test the derived classification cut scores of the CI scales relative to the comparable categorical scoring strategy employed on the standard MAYSI-2 scales. In order for the gender-specific CI scales to warrant further exploration, the scales should demonstrate similar or superior predictive utility in the identification of SMI compared to standard scales. While standard MAYSI-2 scales were also significant predictors of the SMI criterion, superior predictive utility was identified for White male and female youth when using the gender-specific CI scales. CI scale classification accuracy remained significant but more comparable to standard scales in predicting SMI for Black male and female youth.

Clinical Implications of the CI Scale

This study represents the initial validation of a list of critical items on the MAYSI-2. While further validation and replication across different samples will be needed, the following clinical applications are offered cautiously regarding the use of this approach in screening justice-involved youth for significant mental health difficulties. The gender-specific CI scales show potential as a possible adjunctive scoring mechanism to the standard scale level approach at both the scale and item level.

Consistent with the recommendations from the MAYSI-2 manual, a youth scoring above the gender-specific cut-score should likely be referred for follow-up assessment. Given the CI scale validation strategy, the scales are most likely to be useful in identifying youth in need of immediate clinical follow-up post screening. The identification of lower and upper-threshold cut-scores mirrors the Caution and Warning scoring system utilized on standard MAYSI-2 scales. Additionally, uniformity in lower and upper-threshold cut-scores will promote quick and consistent identification of male and female youth who are experiencing high levels of distress relative to their same-sex peers.

In reference to item-level applications, the CI scales are comprised of items from several scales, and therefore allow the assessor to review problem endorsement within and across different scales. Clinicians conducting a post-screening follow-up interview may spend extra time examining endorsement of critical items within each scale given the item's association with significant mental health problems. Regardless of the overall elevation of individual standard scales, it may also be useful to review a positive endorsement of individual critical items, particularly items drawn from the Suicide Ideation scale, as these items all demonstrated a significant association with the SMI criterion.

Limitations of the Current Study

There are several limitations to the current study that warrant specific mention. Although the current sample included a large number of female youth, the gender breakdown of the sample was unequal, resulting in a much larger number of male youth. Female justice-involved youth constitute an especially high-risk group and deserve special attention in juvenile justice research (see Cauffman, 2004; Chamberlain & Moore, 2002; Kataoka et al., 2001; McCabe, Lansing, Garland & Hough, 2002; Veysey, 2003). Future MAYSI-2 research should attempt to replicate the current findings in a larger sample of justice-involved females across different levels of the juvenile justice system.

A second limitation to the present study concerns the race breakdown of the sample. Previous MAYSI-2 studies have been conducted with diverse samples that included large proportions of Caucasian and

Hispanic youth (see Cauffman et al., 2007; Grisso et al., 2001). Race in the current sample was predominately Black, with fewer White youth and a very low proportion of other groups (less than 2%). Although the race breakdown of this sample is representative of the region in which the data were collected, the results may not generalize to other populations. More importantly, the CI scales must be examined in multiple samples of Hispanic youth.

A final limitation concerns the use of the SMI classification as the standard of comparison in validating the CI scales. Reliability data for this designation are not available and the exact nature of the mental health impairment cannot be determined from the classification. The designation of SMI is not a standardized measure and does not exclusively map onto specific psychiatric diagnoses. However, the SMI classification does represent a smaller percentage of youth (relative to the total sample) that are identified as having functional mental health impairment necessitating specialized mental health and psychiatric services as well as additional safety precautions in response to institutional management problems in a secure custody setting (see Coccozza & Skowrya, 2000). MAYSI-2 scale level results were available to the assessment team who assigned the SMI classification. However, concerns about the lack of independence is somewhat mitigated based on the following. First, initial identification of critical items was examined at the item-level testing all 52 MAYSI-2 items as possible predictors of the SMI criterion. Second, post-MAYSI-2 screening, all youth received additional mental health testing and psychiatric consultation, which was also used in making the final decision regarding SMI. Finally, many youth who were designated SMI did not elevate MAYSI-2 scales indicating there is not a complete correspondence between MAYSI-2 scale elevations and the SMI designation. Thus, we support that the SMI classification represents a reasonable criterion in the first step toward validation of the CI scales.

Future Research

Future research should focus on replication of the current results in a number of independent samples. Specifically, researchers should attempt to replicate the formation of the CI scales and cut scores in samples with balanced gender and race break-

downs across all levels of the juvenile justice system (i.e., community supervision, short-term detention facilities, residential treatment facilities, and long-term secure custody settings). The use of a single sample to identify critical items and scale-level cut scores can result in optimized scores that are sample dependent; therefore, testing in other independent samples is necessary. Additionally, future research should examine the incremental validity of the CI scales above and beyond the standard scale results against additional independent criterion measures. Finally, given the limitations of the SMI criterion noted above, the CI scales should be further validated against other external criteria such as standardized measures of psychopathology, psychiatric diagnoses, and other relevant predictive criterion (i.e., crisis interventions, hospitalizations, frequency and intensity of mental health service delivery).

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Gender Differences in Violent Outcome and Risk Assessment in Adolescent Offenders After Residential Treatment

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In light of the increase of violence in female adolescents during the past few decades, not only preventive, but also remedial strategies are important to mitigate this trend. Once high-risk female adolescents enter the juvenile justice system, it is important to be able to use reliable and valid instruments to predict reoffending. However, only a few studies have focused on risk assessment specifically addressing female adolescents. This prospective study examined gender differences in violent recidivism over an average follow-up period of 18 months after discharge, making use of the Dutch version of the Structured Assessment of Violence Risk in Youth (SAVRY). The SAVRY was coded for 35 female adolescents and a comparison sample of 47 male adolescents on the basis of file information before their release. The juvenile court had referred all these juveniles to a juvenile justice facility, because of violent offending and severe behavioral problems. Data on recidivism were retrieved from the Identification Service System of the National Police Services. Significant differences were found between the two gender groups on a number of SAVRY items. The predictive validity of the SAVRY for violent recidivism was good for girls ($AUC = .85$) and for boys ($AUC = .82$). However, false positives for girls were found more frequently than for boys. Implications for gender specific risk assessment and risk management in clinical practice are discussed.

Antisocial behavior among girls is becoming an increasing concern in society. In The Netherlands, the number of registered criminal acts committed between 1998 and 2003 by girls aged 12 to 18 years per 10,000 inhabitants increased from 110 to 163 (+48%). By comparison, for boys this increase was from 719 to 821 (+14%) in the same period (Eggen et al., 2005). In particular, a striking increase (300%) of interpersonal violent acts committed by girls has been demonstrated from 1960 to 2003. The girl-to-boy ratio for charged violent crimes increased during the 20 years from 1980 to 1999 from 1:15 to 1:5 (Kruissink & Essers, 2001). By comparison, in 2001 this ratio for charged violent crimes was 1:2.5 in the U.S. (FBI, 2001). Steffensmeier, Schwarz, Zhong, and Ackerman (2005) concluded after an examination of recent trends in girls' violence, that several policy shifts have apparently escalated girls' arrest-proneness: first, stretching definitions of violence to include minor incidents that girls are more likely

to commit; second, increased policing of violence between close friends and in private settings (for example, home, school) where girls' violence is more widespread; and, third, less tolerant family and societal attitudes toward juvenile female offenders.

Most studies on adolescent female aggression are based on normative, epidemiological studies (Odgers & Moretti, 2002). The central conclusion in normative studies was that risk factors for antisocial behavior were remarkably similar for males and females (Fergusson & Horwood, 2002; Moffitt, Caspi, Rutter, & Silva, 2001). These findings from normative samples contrast with results from research with high risk juveniles in the justice system. Although high risk boys and girls demonstrate the presence of similar risk factors, such as maltreatment, low SES, and substance use, girls are more likely to exhibit concurrent and elevated levels of risk across multiple domains (Moretti, Holland, & McKay, 2001). Garvazzi, Yarcheck, and Chesney-Lind

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(2006) found that girls in the juvenile justice system exhibit more problem behavior that may lead them into serious trouble. Girls had more problems than boys in family and peer relations, physical health, mental health and traumatic events. Findings from a study of a stratified sample of adjudicated juvenile delinquents indicated that females have significantly higher rates of psychopathology, maltreatment history, and more familial risk factors than males (McCabe, Lansing, Garland, & Hough, 2002). Girls in juvenile justice samples are more likely to have experienced severe physical and sexual victimization (Chesney-Lind & Sheldon, 1998; Hamerlynck, Doreleijers, Vermeiren, Jansen, & Cohen-Kettenis, 2007). On the basis of a meta-analytic review, Edens and Campbell (2007) concluded that the weighted mean effect size of psychopathy, as measured by the Psychopathy Checklist: Youth Version (PCL: YV), for female offenders was appreciably lower than that for male samples. Psychopathy includes characteristics like: trying to manipulate others; callous or lacking empathy; not taking responsibility for actions; having friends who are in trouble with the law.

Although, in general, girls' offenses are less serious, some researchers have highlighted girls' involvement in assaults. In many instances, these assaults occur in the context of their relationships with others. For instance, a qualitative study of girls' assault records indicated that many of the assaults occurred between girls and their parents (Acoca, 1999). Some researchers have found that girls' involvement in more serious, violent crimes is due to their relationships with males who are criminal, or due to their affiliation with gangs (Acoca, 1999; Molitor, 1996).

Once female adolescents have entered the juvenile justice system it is important to have remedial interventions at one's disposal to prevent violent reoffending. Preferable, remedial interventions targeted at reducing the risk of violent recidivism in offenders are based on structured professional risk assessment (Borum, 1996). However, while the field of violence risk assessment among male adolescents has progressed rapidly over the past decade (Borum & Verhaagen, 2006; Hoge, 2002; Lodewijks, Doreleijers, de Ruiter, 2008-a; Lodewijks, Doreleijers, de Ruiter & Borum, 2008-b; Schmidt, Hoge, & Gomes, 2005), limited research

is available on risk assessment with high risk female adolescents (Odgers, Moretti, & Reppucci, 2005). Odgers et al. (2005) stated that predicting violence in girls faces different issues compared to violence in males or adult females, such as the low base rate of traditional forms of violence among females, the different expression of violence among females as compared to males, the significance of a violent history, and an early onset of antisocial and aggressive acts as a predictor of future violence. Violent female adolescents tend to disappear in statistical records when traditional violence measures are used and if they engage in violent behavior; as an adult, it often happens within the home and has less chance of being detected.

This Study

The use of violence risk assessment instruments can only be helpful if they are reliable and valid; that is, among a group of juvenile offenders the measure is sensitive to the factors that distinguish future reoffenders from non-reoffenders. This study was designed to examine possible gender differences in reliability and validity of a widely used risk assessment tool for violence, the SAVRY (Structured Assessment of Violence Risk in Youth; Borum, Bartel & Forth, 2002). The SAVRY is a risk assessment tool based on the structured professional judgment model and intended for use with adolescents. The structure of the SAVRY is modeled on existing risk assessment instruments for adults such as the Historical, Clinical, Risk Management-20 (HCR-20; Webster, Douglas, Eaves, & Hart, 1997), but its item content focuses on risk factors relevant to adolescents.

The SAVRY guideline is composed of 24 risk items, divided into three domains (historical, social/contextual and individual) and a protective domain with six items. The risk items have a three-level coding structure (low, moderate, and high) and the protective items have a two-level structure (absent or present). Specific coding guidelines are provided for each item and each level. The SAVRY is a structured professional risk instrument. The SAVRY manual explicitly advises against the use of numerical indices and cut-off points in clinical decision making. The SAVRY Risk Total score is used only for research purposes. The Risk Total is

derived by numerically transforming and summing codes of Low, Moderate and High for the 24 risk items, to 0, 1, and 2, respectively. In clinical applications, the Summary Risk Rating is used. This rating is the qualitative final professional risk judgment, based on an overall interpretation of the 24 risk items and the six protective items for the case at hand. This Summary Rating is not directly linked to a particular Total score or range of scores.

Psychometric support for the SAVRY is presented in the manual (Borum et al., 2002) and on the website (www.fmhi.usf.edu/mhlp/savry/statement.htm). McEachran (2001) found relatively high reliability (.83) for the Risk Total score and a moderate coefficient (.72) for the Summary Risk Rating. Significant correlations have been found between Risk Total scores and measures of violence among young male offenders in Canada (Catchpole & Gretton, 2003; Gretton & Abramowitz, 2002). Using Receiver Operating Characteristic (ROC) analysis, Areas under the Curve (AUCs) for the Risk Total average between .74 and .80 across these studies. Interestingly, the examiner overall risk judgment (Summary Risk Rating) consistently performs as well as, and often better, than the actuarial combination of the scores. For example, using ROC analysis, McEachran (2001) found an AUC for the SAVRY Risk Total of .70, but the AUC for the SAVRY Summary Risk Rating was .89.

To our knowledge, thus far, only one study has examined the SAVRY in female adolescents. Fitch (2002) followed 82 high-risk adolescent Native American youth (47 male, 35 female) after discharge. The correlations between SAVRY ratings and violent reoffense were significant for both gender groups, but higher for girls compared to boys on all scales.

On the basis of prior research, we hypothesize that:

- (1) Violent recidivism will be associated with other risk and protective items in female adolescents, compared to male adolescents.
- (2) Violent recidivism rates will be higher for boys than for girls.
- (3) Violence in male adolescents will be more addressed towards strangers than violence in female adolescents.
- (4) The static Historical domain will have less predictive power for violence than the dynamic

Social/Contextual, Individual and Protective domains, for both boys and girls.

- (5) The SAVRY Summary Risk Rating and the SAVRY Risk Total will have good predictive validity for violent reoffending, for both girls and boys.
- (6) The SAVRY Summary Risk Rating will add incremental value to the SAVRY Risk Total, for both girls and boys.

METHOD

Setting

The present study was conducted in Rentray, one of the thirteen juvenile justice facilities in The Netherlands. Rentray has a national coverage and is a treatment and correctional facility for 400 male and female juveniles between 12 and 22 years of age. Youths were placed in Rentray by the juvenile court because of serious offenses and/or serious behavioral problems. Treatment methods include individual cognitive therapy, group therapy, experiential art therapy, anxiety and aggression management, impulse control training, drug and alcohol treatment, social skills training, and family therapy. Rentray runs a number of semi-secure and secure units. The present study was conducted in the semi-secure treatment units.

Procedure

First, we selected from the Rentray records the girls with a violent offense in their history. For most of these girls the juvenile judge decided on a civil supervision order. They were subsequently sent to a closed juvenile justice facility before they entered the semi-secure facility of Rentray. Second, we formed a comparison group of boys. For both gender groups, the Dutch language version of the SAVRY (Lodewijks, Doreleijers, de Ruiter, & de Wit-Grouls, 2003) was coded, making use of all file information available before discharge.

The two raters were Master's level psychologists, trained in coding the SAVRY during a two-day workshop given by a senior clinical psychologist (the first author). This workshop reviewed the relevant empirical literature and provided practice cases for

coding the SAVRY using file information of actual cases. Raters were instructed to use the SAVRY manual and all available file information for all cases.

In order to establish the interrater reliability, each rater independently coded 14 cases (40%) of the female sample and 14 cases (30%) of the male sample. Subsequently, both raters discussed their ratings, and agreed upon a consensus rating and the final risk judgment. After the training and consensus meetings, each rater independently coded half of the remaining files. The 28 consensus SAVRY ratings and the 54 single-rated SAVRYs were used for subsequent analyses of predictive validity. The mean follow-up period for the girls was 546 days ($SD = 216$, range = 91–877), and for the boys 504 days ($SD = 200$, range = 93–877). The mean follow-up period for girls and boys did not differ significantly, $t(80) = -90$, $p = .37$.

Participants

The current sample included 35 girls and 47 boys admitted to Rentray between August 2000 and April 2004. They were discharged between February 2003 and January 2005. Table 1 presents demographic, psychiatric and criminal history characteristics for the female and male samples. The samples are not comparable on type of sentencing. Despite the same index offense, girls were significantly more often sentenced with a civil supervision order and boys more often with a mandatory treatment order or a detention order. The general breakdown of violent offenders at the Rentray foundation is the same as found in this sample. Entrance ages ranged for the boys between 15 and 17 and for the girls between the ages of 14 and 17. The ages at the time of their leave ranged for boys between 16 and 19 and for

Table 1
Sample Characteristics

	Girls <i>N</i> = 35	Boys <i>N</i> = 47
<i>Demographic</i>		
Mean age upon admission	15.6	15.7
Mean age at discharge	17.2	17.6
Mean duration of stay in days	614	685
Caucasian Dutch	23 (66%)	27 (57%)
<i>Psychiatric</i>		
Conduct Disorder	14 (40%)	18 (38%)
Oppositional Defiant Disorder	14 (40%)	23 (49%)
Other Axis I disorders	21 (60%)	25 (53%)
Mean intelligence scores	93.6	89.9
<i>Violent index offenses</i>		
(Attempted) manslaughter	3 (6%)	2 (6%)
Sexual violence	2 (4%)	1 (3%)
(Aggravated) assault	28 (60%)	21 (60%)
Robbery	14 (30%)	11 (31%)
<i>Court ordered interventions</i>		
Supervision order	26 (77%)	20 (42%)*
Detention order	7 (20%)	21 (45%)*
Mandatory treatment order	1 (3%)	6 (13%)*

Note. Psychiatric disorders according to the DSM-IV (APA, 1994). * $p < .05$.

girls between 15 and 19. The sample is representative of other violent offenders at Rentray. Of the total population of Rentray about 40% of the boys and 15% of the girls have violent offense histories.

Violent Recidivism

Violent recidivism data were retrieved from the Identification Service System, managed by the National Police Service. This system provides national coverage and has been used by the police since 1986 to register information on suspects. It contains information on reported crimes and personal information on the corresponding suspects. The information includes persons who are at least 12 years old and are named as suspects in a police report. An estimated 10% of the suspects are offered an out-of-court settlement by the Public Prosecutor, or are found not guilty in the court at a later stage (Blom, Oudhof, Bijl, & Bakker, 2005). For the identification of violent offenses we adopted the SAVRY definition of violence: "an act of battery or physical violence that is sufficiently severe to cause injury to another person or persons (i.e., cuts, bruises, broken bones, death, etc.) regardless of whether injury actually occurs; any act of sexual assault; or a threat made with a weapon in hand" (Borum et al., 2002, p. 29).

Statistical Analyses

Student's *t*-tests were used to examine the differences between the two gender groups and SAVRY variables. The interrater reliability was assessed by means of the Intraclass Correlation Coefficient (ICC), using the two-way random effects variance model and consistency type (McGraw & Wong, 1996). We used the following critical values for single measure ICCs: $ICC \geq .75$ = excellent; $.60 \leq ICC < .75$ = good; $.40 \leq ICC < .60$ = moderate; $ICC < .40$ = poor (Fleiss, 1986).

Predictive validity was assessed by using Receiver Operating Characteristics (ROC) analysis (Mossman, 1994; Rice & Harris, 1995). This statistical method is less reliant than other statistical analyses (like correlation coefficients) on the base rates of recidivism and the particular cut off score chosen to classify cases. Also normality need not be assumed. ROC analyses result in a plot of the true positive rate (sensitivity) against the false positive

rate (1 minus specificity) for every possible cut-off score of the instrument. The resulting Area Under the Curve (AUC) can be interpreted as the probability that a randomly selected recidivist would score higher on the instrument than a randomly selected nonrecidivist. An AUC of .50 represents chance prediction, and an AUC of 1.0 perfect prediction. In general, AUC values of .70 and above are considered moderate, and above .75 good (Douglas, Guy, & Weir, 2005).

Survival analysis, also referred to as the Kaplan-Meier method, was used to calculate recidivism rates and the average time prior to that event. Survival analysis calculates the probability of recidivating for each time period given that the offender has not yet reoffended. Once an offender recidivates, he is removed from the analysis for the subsequent time periods. Survival analysis has the advantage of being able to estimate year-by-year recidivism rates even when the follow-up period varies across offenders. The log rank statistic was used to test the differences between the survival curves of the subgroups. To evaluate effects of predictors on survival, the Cox proportional hazards model, which assumes that the hazard ratio is invariant across time (i.e., that the effect of a predictor variable is stable over time), was used (Hosmer & Lemeshow, 1999). Violation of the assumption requires the time interaction effect and ensures that the estimation of the predictor is reliable.

RESULTS

Interrater Reliability

The interrater reliability of the SAVRY subscales for girls ranged from good to excellent (ICC: Historical = .92, Social/Contextual = .80, Individual = .72, SAVRY Risk Total = .82, Protective = .73, and Summary Risk Rating = .68). The interrater reliability of the SAVRY subscales for boys also ranged from good to excellent (ICC: Historical = .77, Social/Contextual = .94, Individual = .88, SAVRY Risk Total = .86, Protective = .83, and Summary Risk rating = .68). In no case did one rater judge "high risk" while the other judged "low risk" on the Summary Risk Rating.

SAVRY Outcomes

Table 2 presents the mean scores and standard deviations for the individual SAVRY items, subscales, Total Risk score and Summary Risk Rating, for girls and boys. As can be seen from this table, the mean SAVRY subscales, Total Risk scores and Summary Risk Ratings did not differ significantly between the female and male samples. However, there were significant differences on some individual SAVRY items. Girls received significantly lower scores on the items "Childhood history of maltreatment" and "Poor school achievement", and higher scores on "History of self-harm or suicide attempts". In the protective domain, item 4, indicating a more positive attitude towards interventions and authority, was significantly more present in girls. Regarding the Summary Risk Rating, girls were significantly more often judged as low and moderate risk, while boys were significantly more often judged as high risk. The mean Risk Total score per final risk judgment category for girls was: "low risk": 14 (range = 6-24); "moderate risk": 22.7 (range = 17-27); "high risk": 30.1 (range = 24-37). For boys, the mean SAVRY Risk Total score per final risk

judgment category was: "low risk": 14.9 (range = 9 - 21); "moderate risk": 20.1 (range = 14-27); "high risk": 25.1 (range = 18-34). The mean Risk Total scores differed significantly between the low, moderate and high risk cases for both boys and girls, $F(2, 44) = 24.4, p < .001$, and $F(2, 32) = 32, p < .001$, respectively. There were no significant differences between boys and girls in the mean Risk Total scores, when the final risk judgment was low, $t(28) = .51, p = .61$; or moderate, $t(25) = -1.9, p = .07$. We found a significant difference when the final risk judgment was high, $t(23) = -2.1, p = .01$, indicating that girls had a significantly higher Risk Total score when they were judged as high risk, compared to boys.

Violent Recidivism

Significantly more boys compared to girls reoffended violently: 17 (36%) out of 47 boys vs. four (11%) out of 35 girls, $\chi^2(1, N = 21) = 6.4, p = .01$. When we accounted for time at risk and used survival analysis, this was 39% for the boys and 13% for the girls. Figure 1 presents the survival curves for violent outcome. Survival analysis revealed that

Figure 1

Kaplan-Meier Survival Curves for Violent Recidivism in Male and Female Adolescents

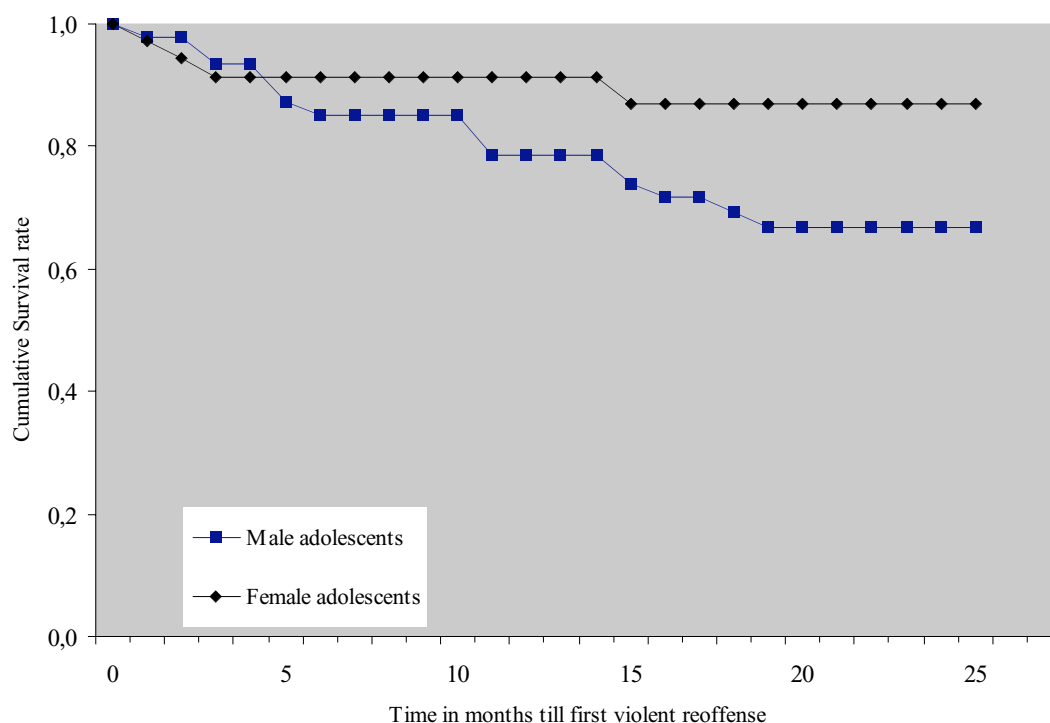


Table 2
Mean SAVRY Scores (Standard Deviations in Brackets) and Summary Risk Rating

	Girls <i>N</i> = 35	Boys <i>N</i> = 47
<i>Historical items</i>		
1. History of violence	1.6 (.49)	1.7 (.45)
2. History of nonviolent offending	1.3 (.73)	1.6 (.57)
3. Early initiation of violence	0.7 (.75)	0.6 (.74)
4. Past supervision/Intervention failures	1.5 (.66)	1.2 (.84)
5. History of self-harm or suicide attempts	0.6 (.74)	0.3 (.54)*
6. Exposure to violence in the home	0.5 (.83)	0.9 (.97)*
7. Childhood history of maltreatment	0.9 (.87)	1.4 (.81)*
8. Parental/Caregiver criminality	0.3 (.67)	0.6 (.90)
9. Early caregiver disruption	0.5 (.82)	0.8 (.96)
10. Poor school achievement	1.2 (.72)	1.8 (.68)*
<i>Social/contextual items</i>		
11. Peer delinquency	0.3 (.62)	0.4 (.64)
12. Peer rejection	0.5 (.70)	0.6 (.77)
13. Stress and poor coping	0.9 (.76)	0.8 (.83)
14. Poor parental management	1.1 (.76)	1.3 (.73)
15. Lack of personal/Social support	0.7 (.82)	0.9 (.87)
16. Community disorganization	0.8 (.98)	0.7 (.90)
<i>Individual items</i>		
17. Negative attitudes	0.7 (.78)	0.8 (.68)
18. Risk taking/Impulsivity	0.6 (.73)	0.7 (.78)
19. Substance use difficulties	0.8 (.72)	0.7 (.64)
20. Anger management problems	0.9 (.83)	1.0 (.66)
21. Low empathy/remorse	0.6 (.61)	0.9 (.78)*
22. Attention Deficit/Hyperactivity Difficulties	0.5 (.74)	0.6 (.76)
23. Poor compliance	0.5 (.61)	0.4 (.62)
24. Low interest/Commitment to school or work	0.5 (.61)	0.4 (.62)
<i>Protective items</i>		
1. Prosocial involvement	0.2 (.38)	0.1 (.31)
2. Strong social support	0.5 (.50)	0.3 (.47)
3. Strong attachments and bonds	0.3 (.47)	0.3 (.44)
4. Positive attitude towards interventions and authority	0.4 (.50)	0.2 (.38)*
5. Strong commitment to school or work	0.5 (.50)	0.4 (.50)
6. Resilient personality	0.1 (.35)	0.1 (.31)
Historical domain	9.3 (3.7)	10.7 (3.0)
Social/contextual domain	4.3 (2.7)	4.8 (2.4)
Individual domain	5.4 (3.0)	5.8 (2.6)
Risk Total score	19 (7.8)	21 (5.3)
Protective domain	1.8 (1.5)	1.4 (1.4)
<i>Summary Risk Rating</i>		
	<i>N</i> (%)	<i>N</i> (%)
Low	20 (57%)	10 (21%)*
Moderate	7 (20%)	20 (43%)*
High	8 (23%)	17 (36%)*

Note. * $p < .05$ (two-tailed).

the survival functions in months for girls ($M = 25.5$) compared to boys ($M = 20.1$) differed significantly (log rank = 6.4, $p = .01$).

Regarding type of violent reoffense, males committed more serious violence compared to girls (manslaughter: 2 vs. 0; rape: 1 vs. 0; aggravated assault: 1 vs. 1; simple assault: 7 vs. 3; robbery: 3 vs. 0). We did an analysis on age and did not find significant outcome differences on violent reoffending between age groups.

We also examined the relationship between the offender and the victim. With regard to the index offense, we found that boys, significantly more often than girls, had a stranger as a victim (55% vs. 26%), $\chi^2(1, N = 82) = 7.2, p = .002$. Regarding the reoffense, the difference was also significant (82% vs. 25%), $\chi^2(1, N = 21) = 5.2, p = .02$.

Although not part of our hypotheses, we also calculated the recidivism rate for general offending, and found a 40% rate for girls and 41% for boys.

Predictive Validity

Table 3 shows the AUC values of the Risk Total and Summary Risk Rating for both girls and boys regarding violent outcome. It was only the Historical scale, for girls and boys that did not yield a significant AUC value. All other AUC values of the SAVRY scales, the Risk Total and Summary Risk Rating were significantly above .50. For the Protective scale, the AUC was significantly below .50, because of the inversed relation between this scale and violent outcome: the more protective factors, the less violence. The difference in violent outcome between girls who were judged to pose a low, moderate or high risk was significant, $\chi^2(2, N = 32) = 6.5, p = .04$ (violent outcome: 0%, 22% and 33%, respectively). The difference in outcome between boys who were judged to pose a low, moderate or high risk was also significant, $\chi^2(2, 45) = 15.7, p < .001$ (violent outcome: 0%, 22% and 68%, respectively).

Although not part of our main analysis, we also calculated the AUC values for general recidivism and found no significant AUCs for girls on any of the subscales or Risk Total. For boys we found a significant association between the Individual scale ($AUC = .68, p < .05$), the Protective scale ($AUC = .74, p < .01$) and for the Risk Total ($AUC = .67, p < .05$).

Next, as summarized in Table 4, we conducted Cox Regression analyses to determine whether the Summary Risk Ratings produced incremental value in the amount of variance explained by the Risk Total. For violent reoffending, the Risk Total score entered in Block 1 produced a significant model fit for girls and for boys. The addition of the Summary Risk Rating in Block 2 added an incremental value to the amount of variance explained. This finding only applied to boys, $\chi^2 \text{ Change}(1, 47) = 5.3, p < .05$, and not to girls, $\chi^2 \text{ Change}(1, 35) = .01, ns$.

DISCUSSION

In this study, a sample of 35 violent girls was compared to a sample of 47 violent boys on SAVRY scores, violent recidivism, and the predictive validity of the SAVRY. We found several significant differences between girls and boys in sample characteristics, mean SAVRY individual item scores, and base rate for violence after discharge. The predictive validity of the SAVRY proved to be good for both girls and boys. The interrater reliability of the SAVRY in the present study ranged from good to excellent and was in line with previous studies with the Dutch version of the SAVRY (Lodewijks et al., 2008-a; Lodewijks et al., 2008-b). We found no differences in interrater reliability between girls and boys.

First, we found a number of differences in sample characteristics. Boys more often, albeit not significantly, had a diagnosis of disruptive behavior disorder compared to girls (87% vs. 80%) and fewer other Axis I disorders (53% vs. 60%). This prevalence rate for disruptive disorders in boys is higher than the reported rate of 75% in an earlier study of Vreugdenhil, Doreleijers, Vermeiren, Wouters, and van den Brink (2004). However, in our sample only violent offenders were included compared to all types of offenders in the study of Vreugdenhil et al. (2004). The prevalence rate found in our sample of conduct disorder (40%) in girls is lower than the prevalence rate of conduct disorder (56%, $N = 216$) in a representative sample of girls in juvenile facilities (Hamerlynck, Doreleijers, Vermeiren, Jansen, & Cohen-Kettenis, 2007). However, Hamerlynck et al. based this finding on

Table 3
Predictive Validity of the SAVRY for Girls and Boys

	Violent recidivism girls <i>N</i> = 35		Violent recidivism boys <i>N</i> = 47	
	AUC	SE	AUC	SE
<i>SAVRY</i>				
Historical domain	.69	.12	.65	.08
Social/contextual domain	.88*	.07	.73**	.07
Individual domain	.87*	.06	.78**	.07
Total Risk score	.84*	.09	.76**	.07
Protective domain	.15*	.07	.16***	.06
Summary Risk Rating	.85*	.07	.82***	.06

Note. * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed). AUC = Area Under the Curve. SE = Standard Error.

Table 4
Cox Regression Analyses using Risk Total Scale and Summary Risk Rating to Predict Violent Reoffending

	Covariates entered	χ^2	<i>p</i>	χ^2 Change	<i>p</i>
Male adolescents					
<i>N</i> = 47 <i>Failure rate</i> = 36%	Block 1: Risk Total scale	8.1**	.004	8.4**	.004
	Block 2:				
	Summary Risk Rating	16.9***	< .001	11.3**	.001
Female adolescents					
<i>N</i> = 35 <i>Failure rate</i> = 11%	Block 1: Risk Total scale	5.3*	.02	5.3*	.02
	Block 2:				
	Summary Risk rating	5.3	.07	.01	.90

Note. χ = Chi square. * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed).

semi-structured interviews with the girls; whereas in the current study, the classification was derived from classifications by mental health experts using collateral information.

Of interest is our finding that the juvenile judge dealt significantly more often with violent girls by issuing a civil supervision order than with violent boys. Boys were significantly more often sentenced to a criminal justice order than girls with comparable index offenses. This finding is in line with the conclusion of Pajer (1998), who has described a gender bias in the justice system, i.e., the reluctance to arrest women coupled with a tendency toward psychiatric referrals for women. Thus, an underestimation of violence among girls would be the result if only the type of sentence was taken as the basic factor.

Second, there were no significant differences in mean SAVRY subscale scores and Risk Total scores for female or male adolescents. This finding differs from that of Fitch (2002), who found higher scores for boys. An explanation might be that in our sample the index offenses were comparable, whereas in the study of Fitch, boys committed more serious offenses than girls. Our finding that girls compared to boys, significantly differed in some SAVRY items is not always in line with previous research. The higher history of self harm or suicide attempts (item 5), and the better school achievement (item 10) are common findings in studies on gender differences (Penney & Moretti, 2007). Contrary to expectation (Odgers, Moretti, et al., 2005) though, were the significantly higher scores for boys on item 7 "Exposure to violence in the home" and item 8 "Childhood history of maltreatment". The significantly lower prevalence of lack of empathy/remorse among female adolescents is in line with previous research into this concept (Odgers, Reppucci, & Moretti, 2005). Finally, the higher presence for girls of the protective item 4, "Positive attitude towards interventions and authority", is in line with previous research found in adult female offenders (de Vogel & de Ruiter, 2005).

Third, regarding violent outcome after discharge, male adolescents in our sample were found to be three times more likely to commit a violent reoffense than female adolescents (males: 36%; females: 11%). Unfortunately, a direct comparison with other follow-up studies in The Netherlands can not be made because specific information on violent recidivism

is lacking. We only know that serious and very serious recidivism amounts to 35.5% for boys and 15.8% for girls two years after discharge (Wartna, Kalidien, Tollenaar, & Evers, 2006). In this study serious and very serious crimes, in addition to violent crimes, also include serious drug crimes and burglary. Furthermore, unknown in these figures is whether the index offense was a violent crime, as in our sample. International comparison is difficult as well, because, as far as we know, most studies on recidivism after residential treatment do not specify a violent index offense followed by a violent reoffense. For instance, Schmidt et al. (2003) reported a recidivism rate of serious reoffenses in juveniles (male: 37.9%, female: 15.9%), including violent offenses, burglary, theft, arson and drug trafficking and of these subjects, 46% of the males and 26% of the females had a previous violent offense. Only Catchpole and Gretton (2003) reported a specific recidivism rate (index and reoffense are both violent offenses) of 23% in a male adolescent sample, one year after discharge. Our recidivism rate of 36% after 18 months is comparable to that of this study.

A possible explanation for the difference in violent recidivism between male and female adolescents in the community is that violence committed by females is often less visible, as in relational violence, child abuse, and violence against relatives (Robbins, Monahan, & Silver, 2003). As hypothesized, we found a significant difference between girls and boys as to whether the victim was a stranger. For the index offense and for the reoffense, we found that boys' violence compared to girls' violence was more often directed towards a stranger. This finding could be explained by the fact that in general, females have different motives for their violent offenses compared to males, more often reactive and relational, and less instrumental or resulting from criminogenic needs (Crick & Grotpeter, 1995).

Fourth, as hypothesized, we found poor predictive validity for the Historical scale, both for girls and boys. Contrary to our hypothesis, we found moderate predictive validity for the Social/Contextual scale for boys. The poor predictive accuracy of the Historical scale was also found in a study on institutional violence (Lodewijks et al., 2008b), but not in the study of Fitch (2002). The

possible poor predicting value of the Historical scale is very interesting, because this result suggests that violence prediction for juveniles, based solely on historical data is quite disputable. Hypothetically, the poor predictive power of the Historical scale might also be explained by the influence of treatment, which is represented in the dynamic scales. More research on this topic is needed.

All the other scales, except the Social/Contextual scale for girls which was good, yielded excellent predictive validity. Notable was the excellent predictive validity of the SAVRY final risk judgment for girls (AUC = .85) and boys (AUC = .82). In our sample, the final risk judgment did not outperform the simple addition of individual SAVRY risk factors, as was hypothesized on the basis of previous research (McEachran, 2001). However, the latter was a retrospective file study, where 108 young male offenders were evaluated at a youth forensic service. The outcome criterion used was official crimes committed after reaching adulthood, generally around a three-year follow-up period. By comparison, our study had a prospective design and we followed the juveniles for half this period. Because one does not know in advance who will recidivate and at what time, in risk assessment research a prospective design is preferable. Moreover, in a prospective design all data are available at the time of risk assessment. In a retrospective design it is more difficult to gather retrospectively all the necessary information. On the other hand, prospective designs will be hampered by the clinical goal of risk assessment, i.e. risk management and prevention (Hart, 1998). Thus, when clinicians perform SAVRY risk assessments it is likely that outcome influences decisions on leave and treatment plan, and at the end will influence also violent outcome. However, in our study SAVRY outcome was unknown to the clinicians and did not influence their decisions.

Fitch (2002) reported correlations and not AUCs between the SAVRY subscales and violent outcome in her study. She found significant correlations, for girls and for boys, and mostly higher correlations for girls compared to boys (Historical scale: .66 vs. .45; Social/Contextual scale: .74 vs. .47; Individual scale: .64 vs. .35; SAVRY Risk Total: .72 vs. .50). In a post hoc analysis, we found lower correlations for girls compared to Fitch's sample; they were significant for both sexes, except for the Historical

scale (Historical scale: .27 vs. .24; Social/Contextual scale: .35 vs. .47; Individual scale: .46 vs. .40; SAVRY Risk Total: .46 vs. .43).

Finally, a few concluding remarks on gender differences in the use of SAVRY should be made. We found that girls had a significantly higher Risk Total score compared to boys when they were judged in the Summary Risk Rating as high risk. A possible explanation for this finding is that the raters in their training were taught that girls in general have a lower risk of violent reoffending. This could have affected their Summary Risk Rating. We found significant predictive validity of the SAVRY Summary Risk Rating. On closer look we found that the ratio of false negatives in the case of low risk was the same for girls and boys (0% vs. 0%), but the ratio of false positives in the case of high risk was higher, albeit not significantly so, for girls compared to boys (66% vs. 32%), $\chi^2(1, 25) = 2.3, p = .13$. It appears that the SAVRY final risk judgment has perfect predictive accuracy for low risk judgments in both males and females, and reasonable predictive accuracy for high risk judgments in male adolescents, but doubtful predictive accuracy for female adolescents. Furthermore, we hypothesized that the final risk judgment (Summary Risk Rating) would add incremental value to the Risk Total score. We found this to be true for boys but not for girls. These results indicate a more reluctant attitude towards risk assessment with female adolescents.

A number of limitations to the present study should be mentioned. First, the violent outcome data may have been an underestimation of actual violence. The violent recidivism data were retrieved from only one source, the Identification Service System, managed by the National Police Service. The persons in this system are suspected of a crime. The disadvantage of this system is that ultimately 10% will not be prosecuted because of lack of legal evidence and/or not being guilty. However, the advantage of the police registration system is that all suspects of violence are registered, which is especially important for girls, because they will disappear in statistical records when we make use of another source, in which only adjudicated crimes are included. As a consequence of using official registers, the reconviction rate in our study is inevitably an underestimation of the actual recidivism rate because not all offenders are reported. And

this might explain the relative high ratio of false positives in girls, because they are underestimated in official records. Second, the sample sizes were relatively small and only derived from one site. However, given that there is such a paucity of research on adolescent females in juvenile justice facilities, we believe even samples of limited size, such as ours, can make a contribution to the knowledge base.

Based on this study, we have two suggestions for policy implications. Firstly, more attention should be paid in treatment programs to violent careers of violent girls, especially because of the danger of intergenerational transference when these girls have children of their own. Secondly, in preventive programs for violent offending in girls, more attention should be paid to relational violence.

More knowledge on specific risk factors for violence and the risk management strategies needed to prevent repeated violence in female adolescents are desirable. This is also important from a public mental health perspective because research has demonstrated an intergenerational transfer of risk of aggression between mothers and their children; mothers with a history of violent offense(s) more often have disruptive, aggressive children (Serbin et al., 1998). As on the SAVRY, other risk markers might be added in the item list to improve the prediction of violent outcome in female adolescents. Possible candidates for gender refinement not in the SAVRY, are: sexual abuse from the age of 12 (Chesney-Lind & Sheldon, 1998; Corrado, Odgers, & Cohen, 2001; McKnight & Loper, 2002); psychiatric comorbidity (Das, de Ruiter, Lodewijks, & Doreleijers, in press; Teplin, Abram, McClelland, Dulcan, & Mericle, 2002; Hamerlynck et al., 2007); being lured into exploitative relationships, because of intense need for acceptance (Artz, 1998; Downey, 2002) and insecure attachment (Allen et al., 2002; Moretti, DaSilva, & Holland, 2004). Religiosity was found to be a quite specific protective factor for girls and not for boys (Resnick, Ireland, & Borowsky, 2004).

Our findings demonstrate that the method of structured professional judgment, i.e. systematically rating risk factors, integrating and weighing information, is effective in the prediction of violence for both female and male adolescents. For treatment purposes, we recommend that clinicians be cautious

about the use of risk assessment in female adolescents. The higher probability of false positives in girls might cause prolonged incarceration or stricter probation conditions than necessary and this might cause demotivation and a counter-productive outcome.

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Diagnostic Comorbidity in Psychotic Offenders and Their Criminal History: A Review of the Literature

Kris R. Goethals, Ellen C.W. Vorstenbosch, and Hjalmar J.C van Marle

There is growing evidence that there is a relationship between a psychotic disorder and violent behavior. Diagnostic comorbidity of a psychotic disorder with substance abuse, a personality disorder or psychopathy increases the likelihood of violence. The aim of this review is to examine the literature about the relationship between a psychotic disorder and violence, and about comorbidity of a psychotic disorder with substance abuse, a personality disorder and/or psychopathy. A search of www.PubMed.com and www.PsychInfo.com for the period 1990-2006 yielded 1942 articles. Ultimately, however, only 73 articles remained after eliminating those on irrelevant topics. Results showed that the roles of substance abuse, the presence of a personality disorder, or a high score on the revised psychopathy checklist are confirmed as important risk factors by many authors. This review revealed a high degree of agreement that possible comorbidity in schizophrenic offenders should be mentioned routinely in scientific research as it has an essential effect on the development of the offender's illness.

Professionals in mental healthcare are more and more often being held responsible for the behavior of the mentally ill patients that they are treating, some of which turn out to be violent. The possibility of violent behavior among psychotic patients is a particular subject of discussion because of its unpredictability and the diverse responsibilities of public mental healthcare and of the police. A large variety of personal, circumstantial, and environmental factors seem to play a role here (Monahan & Steadman, 1994). Some of these patients are less violent than the average of the population, while others are significantly more violent. This is probably due to intermediary factors that result in a confounding bias in epidemiological studies of violent behavior in psychiatric patients with a psychosis. Do psychotic patients more often show violent behavior in the presence of comorbidity such as substance abuse and/or a personality disorder?

This review covers the literature on diagnostic comorbidity as a risk factor for violent behavior in psychotic patients. The prevalence of violent

behavior in psychotics, the symptoms of the psychosis, comorbid substance abuse, and a comorbid personality disorder and/or psychopathy will be discussed, in that order.

METHOD

Literature between 1990 and 2006 was reviewed; a search of www.PubMed.com and www.PsychInfo.com yielded 1942 articles using the following search terms: (crime/violence) AND (psychosis/schizophrenia) AND (substance abuse); (crime/violence) AND (psychosis/schizophrenia) AND (personality disorder/psychopathy); or (crime/violence) AND (psychosis/schizophrenia) AND (youth). Ultimately, however, only 73 articles remained after eliminating the articles on the following topics: women or differences between men and women, sex offenders only, biological causes or treatment, disorders other than those specified in this study (such as eating disorders), a specific event, place or group that was

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not relevant to the study, too few experimental subjects, the relationship between schizophrenia and an irrelevant subject, no clearly psychotic or schizophrenic patients studied, and only the diagnostics, treatment or symptomatology of schizophrenia.

RESULTS

Relationship between a Psychotic Disorder and Violence

There is increasing evidence of a relationship between a mental disorder and violence (Angermeyer, 2000; Eronen, Tiihonen, & Hakola, 1997; Otto, 2000; Walsh, Buchanan, & Fahy, 2002). The chance of violent behavior is greater in both men and women that have a history of psychiatric care than in people without a history of psychiatric care who were convicted of an offence (Hodgins, Mednick, Brennan, Schulsinger, & Enberg, 1996). There is an especially high risk associated with certain psychiatric diagnoses and certain constellations of symptoms, such as schizophrenia and other psychotic disorders combined with substance-related disorders and an antisocial personality disorder (Eronen, Angermeyer, & Schulze, 1998).

A study of the relationship between a diagnosis of psychotic disorder and the number of arrests revealed that the type of diagnosis and the social class, together with gender and the number of psychiatric admissions, were predictors of the differences in the number of arrests among persons with psychosis (Muntaner, Wolyniec, McGrath, & Pulver, 1998). Conviction for a criminal offense also appeared to be related to the psychiatric diagnosis. Thus, compared to men with an affective psychosis, schizophrenic men had a greater chance of a previous conviction, time in prison, a younger age at time of first conviction, and a more violent offense (Coid, Lewis, & Revely, 1993). Other studies have also shown that the chance of committing an offense against property, a drug-related offense, or a violent crime was greater among persons with schizophrenia than in a matched control group from the general population (Modestin & Ammann, 1996; Wessely, 1994; Wessely, Castle, Douglas, & Taylor, 1998). The chance of committing murder was also ten times

higher than in the general population (Eronen, Tiihonen, & Hakola, 1996). Despite the larger number of violent offenses committed by persons with schizophrenia, the violence was almost always less severe than in the general population (Linqvist & Allebeck, 1990).

Two groups can be distinguished among offenders with a mental disorder: early starters, who already began their criminal career in childhood (under the age of 18); and late starters, who committed their first offense while adults (over the age of 18). Early and late starters differ in their behavior, comorbid disorders, personality characteristics, and the tendency to refuse treatment, in childhood, adolescence, and in adulthood. Their parents also differ, especially with reference to more substance abuse (Tengström, Hodgins, & Kullgren, 2001). These early starters were comparable to what Moffitt & Caspi (2001) described as childhood-onset delinquents that had childhoods of inadequate parenting, neurocognitive problems, and emotional and behavioral problems. Adolescence-onset delinquents did not have these pathological backgrounds. In her study, Hodgins (1992) found that the criminal behavior had started before the age of 18 in more than half of an unselected birth cohort.

The strongest predictors of violence among persons with schizophrenia are a prior history of violent behavior, male gender, low educational level, poverty, and/or unmarried status (Glancy & Regehr, 1992). It was striking that these variables seemed to be less relevant for violence in the emergency clinic or in departments where violence seemed to be related especially to the severity of the psychopathology, substance abuse, neurological problems, and the healthcare environment. One third of all patients with a first psychotic episode were aggressive at the moment of admission, and among patients with schizophrenia, violence in the week following admission was associated with substance abuse and high psychopathological scores on the Structured Clinical Interview for DSM-III-R (SCID; Spitzer, & Williams, 1986), the Positive and Negative Syndrome Scale (PANSS; Kay, Fiszbein, & Opler, 1987), and the Modified Overt Aggression Scale (MOAS; Foley et al., 2005; Kay, Wolkenfeld, & Murrill, 1988). Aggression on the ward was very strongly associated with paranoid schizophrenia (Benjaminsen, Gotzsche-Larsen, Norrie, Harder, &

Luxhoi, 1996). Patients with bipolar affective disorder and schizophrenia had a 2.81- and 1.96-fold increased risk of aggression, respectively, while depression and adjustment disorder conferred a significantly lower risk. High-risk patients were identified as those who were under 32 years of age, actively psychotic, institutionalized, and known to have a history of aggression and substance abuse (Barlow, Grenyer, & Ilkiw-Lavalle, 2000).

According to Soliman & Reza (2001) frequent changes in medication, frequent use of sedative drugs, a history of criminal behavior, a DSM-IV diagnosis of antisocial or borderline personality disorder, and prolonged hospitalization constitute the strongest predictors of violence among psychiatric patients. They also found a relationship between violence and involuntary admission, a comorbid diagnosis, and a past history of automutilation and substance abuse (not including alcohol). A large proportion of the truly aggressive behavior of male patients can also be predicted on the basis of the following clinical factors: transfer from a general psychiatric hospital because of violent behavior, a double diagnosis of schizophrenia and substance abuse or dependence, physical abuse during childhood, a cognitive disorder, and emotionality (Hoptman, Yates, Patalinjug, Wack, & Convit, 1999). Male gender, the number of hospitalizations, and alcohol abuse were predictors of aggression towards others. It was concluded that aggression directed at oneself and others is a frequent symptom of schizophrenia and is strongly associated with readmission (Steinert, Wiebe, & Gebhardt, 1999).

Tengström (2001) emphasized the importance of historically determined risk factors for the long-term prediction of violence or recidivism. Factors that were associated with long-term recidivism included criminal behavior during childhood and adolescence, a younger age at the moment of release from prison, drug-related offenses, conviction for a violent offense, being separated from one's parents before the age of 16, alcohol-related offenses, offenses of various types, short periods of work, and the absence of a psychosis (Villeneuve & Quinsey, 1995). Teplin, Abram, and McClelland (1994) investigated whether prisoners with schizophrenia, an affective disorder, a substance-related disorder, or psychotic symptoms (hallucinations and delusions) were arrested more often during the six years

after release from prison than prisoners without a mental disorder. Neither a severe mental disorder nor substance abuse or dependence predicted the probability of arrest or the number of arrests for violent offenses. The stereotype that psychotic criminals always, without exception, commit violent offenses after release from prison turned out not to be true. This finding was supported by the study of Rice and Harris (1995). In that study, schizophrenia was associated with recurrent violence, but the relationship with recent discharge from an institution was negative.

Violent behavior was generally associated with more severe psychotic symptoms, especially cognitive disorders and delusions (Taylor et al., 1998; Steinert, Wölfe, & Gebhardt, 2000). Fresán et al. (2005) came to a comparable conclusion but added hallucinations, poor control over impulses, and a state of excitation. Our own study (Goethals, Buitelaar, & van Marle, 2007) revealed that psychotic patients detained in a Dutch maximum-security hospital did not have more positive psychotic symptoms than psychotic patients in general psychiatry. There were, however, a few symptoms of psychomotor poverty that were seen significantly more often in these psychotic patients, i.e. the inability to feel intimacy and closeness, social inattentiveness, and lack of persistence at work or in school. Nolan et al. (2003) emphasized the relation between violence and positive psychotic symptoms such as delusions, hallucinations and poor control over impulses, but also found a relation with psychotic confusion and disorganization. The presence of severe positive symptoms increased the chance of aggression during the first six months after discharge (after controlling for the presence of an antisocial personality disorder, a pathological PCL-score, and a prior diagnosis of substance abuse). During a second period after discharge (after controlling for the same variables), the presence of severe positive symptoms again increased the chance of aggressive behavior, but so did the presence of or an increase in threat and control-override (TCO) symptoms. One speaks of threat and control-override when the (paranoid) feeling of being threatened is so intense that loss of control (control-override) occurs in a psychotic patient. Neither medication nor involuntary admission was able to reduce the chance of aggressive behavior after controlling for the presence

of positive and TCO symptoms (Hodgins, Hiscoke, & Freese, 2003). Swanson, Borum, Swartz, and Monahan (1996) duplicated a study in which an increased risk of violence was associated with a certain cluster of psychotic symptoms, including TCO symptoms. Respondents with TCO symptoms had twice as high a risk of violent behavior as respondents with hallucinations and other psychotic symptoms, and five times as high a risk as respondents without a mental disorder. However, Appelbaum, Robbins, and Monahan (2000) found no relationship between violent behavior and delusions in psychiatric patients. This was true for delusions in general as well as for the more specific "threat/control override" delusions. The TCO concept also turned out to be unusable as a predictor of violence. There were no significant differences in the prevalence of TCO symptoms during the course of the illness between a group of forensic patients with schizophrenia and a matched group of schizophrenic patients that had not committed an offense. When the severity of the offense was taken into consideration, TCO was found to be associated with severe violence that could be ascribed primarily to nonspecific feelings of threat. Control-override (which is considered to be more or less typical for schizophrenia) showed no significant association with the severity of violent behavior (Stompe, Ortwein-Swoboda, & Schanda, 2004).

Comorbidity of Schizophrenia, Violence, and Substance Abuse

Since 1990, research has revealed considerable variation in the prevalence of substance abuse in patients with schizophrenia. In a sample of schizophrenic patients, Cantor-Graae, Nordström, and McNeil (2001) found a lifetime prevalence of substance abuse of 48%, mainly alcohol, alone or in combination with other agents. Significant associations were also found between substance abuse and male gender, criminal behavior, more frequent hospitalization, and a family history of substance abuse. Swanson et al. (1997) found violent behavior in psychiatric patients to be related to comorbid substance abuse, the absence of recent contact with psychiatric services, and psychotic symptoms such as a feeling of being threatened and cognitive disorganization. Soyka (2000) emphasized the

importance of recurrent intoxication, so that the increased risk of aggression cannot be interpreted simply as the result of poor social integration. Finally, Tengström et al. (2001) emphasized the importance of substance abuse in early starters (those with the first conviction before the age of 18), due to both the presence of a diagnosis of substance abuse and the fact that most early starters were intoxicated at the time of the offense. Moreover, early starters differed from late starters in the prevalence of substance abuse by the parents, low grades at school, and a conduct disorder at an early age.

What is the effect of substance abuse on the relation between violence and a psychotic disorder? According to Smith & Hucker (1994), substance abuse is more prevalent among psychiatric patients than previously supposed. Patients with schizophrenia, especially, are more susceptible to the negative effects of substance abuse, such as antisocial and violent behavior. Phillips (2000) arrived at a comparable conclusion: the prevalence of violent behavior was higher in patients with both a psychiatric disorder and comorbid substance abuse than in those with a single diagnosis. Such a dual diagnosis was a significant predictor of violent behavior. Male patients with schizophrenia in a large Finnish birth cohort were also found to be at high risk of committing a violent offense (Tiihonen, Isohanni, Räsänen, Koiranen, & Moring, 1997). The prevalence of registered offenses was highest amongst schizophrenic patient with comorbid alcohol abuse and patients with an alcohol-induced psychosis. Steinert, Hermer, and Faust (1996) compared a group of violent male patients with schizophrenia with nonviolent patients with schizophrenia; substance abuse was seen in 70% of the aggressive male patients with schizophrenia versus 13% of the patients who had no history of violent behavior. This is in agreement with the results of a study by Blanchard, Brown, Horan, and Sherwood (2000). According to them, substance abuse was seen in half of the schizophrenic patients, especially in young men.

A large retrospective study of hospitalized Swiss patients and a matched control group from the total Swiss population (Modestin & Ammann, 1995) revealed that the number of criminal convictions was significantly higher among users of alcohol and drugs, independent of sociodemographic factors. The

chance of having a criminal record was twice as high among schizophrenic males with comorbid substance abuse as in schizophrenic males without substance abuse (Modestin & Würmle, 2005). In comparison with the rest of the population, however, the chance of having committed a violent offense was greater in patients with schizophrenia without substance abuse. Our own study (Goethals, Buitelaar, & van Marle, 2008) revealed that violent male psychotic offenders with a substance abuse-related disorder were significantly younger at the time of their first conviction, but they had not committed more violent sexual offenses or offenses against property, and had not spent more months in prison prior to the index offense than psychotic offenders without a comorbid diagnosis of substance abuse. However, the prior criminal history was no more serious in those that were intoxicated at the time of the index offense than in those that were not intoxicated. We concluded that the role of substance abuse in psychotic offenders was related directly to the psychotic disorder and less to the criminal environment in which these patients find themselves. Finally, van Panhuis & Dingemans (2000) compared three Dutch cohorts of mainly male, violent psychotic offenders. This comparison also showed that the use of alcohol and drugs can aggravate violent behavior in patients with a psychosis.

Does substance abuse affect certain aspects of psychiatric care? Munkner, Haastrup, Jorgensen, Andreasen, and Kramp (2003) analyzed the records of all Danish patients with schizophrenia born after 1 November 1963. A substance abuse-related diagnosis was associated with a younger age at the time of first contact with a psychiatric hospital, but had no effect on the age at the diagnosis of schizophrenia. Lindqvist and Allebeck (1990) found that the most offenses were committed by patients that had been ill for many years but had never been hospitalized. These results again underline the role of substance abuse and social disintegration in the violent behavior of patients with schizophrenia. The study by Swartz et al. (1998) showed that the combination of comorbid substance abuse and poor compliance with medication increased the risk of violent behavior in psychotic patients.

What is the impact of the type of substance abuse on violent behavior? In Finland, the likelihood of committing a violent offense was 25 times as high

in male schizophrenic patients that used alcohol as in mentally healthy persons, compared to 3.6 times for patients with schizophrenia that did not use alcohol and 7.7 times for patients with other psychoses (Räsänen et al., 1998). In this study, patients with schizophrenia that did not use alcohol did not have relapses, in contrast to those that did use alcohol. In a New Zealand birth cohort, Arseneault, Moffitt, Caspi, Taylor, and Silva (2000) investigated the relation between mental illness and violence. Individuals with alcohol dependence, cannabis dependence, and a schizophrenic disorder had a 1.9, 3.8 and 2.5 times greater chance, respectively, of displaying violent behavior. The individuals with at least one of these three disorders constituted one fifth of the study population but were responsible for half of all violent offenses. In persons with alcohol dependence, their violent behavior could best be explained by the use of alcohol prior to the offense. In persons with cannabis dependence there was an association with a conduct disorder in childhood.

The assumption that substance abuse precedes violence in society was investigated by Cuffel, Shunway, Chouljian, and MacDonald (1994). The chance of displaying violent behavior was especially high in patients with a pattern of multiple drug use, including illegal drugs. Miles et al. (2003) reported that 34% of their psychotic patients used alcohol, 22% used alcohol and cannabis, 12% used cannabis alone, and 24% used stimulants. A history of violent behavior was seen significantly more often in the users of stimulants. There were hardly any other differences between the various subgroups of patients with various types of substance abuse. Corbett, Duggan, and Larkin (1998) found no indication that patients with schizophrenia prefer a particular type of drug compared to patients with a personality disorder. Drug abusing male inpatients with a personality disorder were significantly more likely than patients with schizophrenia to have consumed alcohol at the time of the violent offense.

Finally, let us examine the effect of a combination of substance abuse and a personality disorder in psychotic offenders. The prevalence of a comorbid personality disorder and substance abuse in male psychotic patients convicted for (attempted) murder was investigated by Putkonen, Kotilainen, Joyal, and Tiihonen (2004). A lifetime prevalence of substance

abuse was found in 74% and a lifetime prevalence of alcohol abuse in 72%. Half of the group had a comorbid personality disorder, including 47% with an antisocial personality disorder. It is striking that substance abuse was seen in all offenders with a personality disorder. Only 25% of the patients did not have a comorbid disorder. Steele, Darjee, and Thomson (2003) compared patients with schizophrenia with and without substance dependence. Those with substance dependence more often had a criminal history and were intoxicated prior to hospitalization. Moreover, they more often had an antisocial personality disorder. In a study by Baxter, Rabe-Hesketh, and Parrott (1999) schizophrenic patients were followed for 10 years after their discharge from a medium-security treatment facility. Prior to treatment, the patients had a history of frequent intramural psychiatric care, violent offenses, substance abuse, alcohol abuse to a lesser degree, and a conduct disorder. Compared to patients with only schizophrenia, those with a comorbid conduct disorder or problematic use of alcohol had twice as high a risk of violent behavior. The chance of a relapse was increased by young age, multiple drug use, or a conduct disorder.

Comorbidity of Schizophrenia with a Personality Disorder

First, we shall examine the association between schizophrenia, an antisocial personality disorder, and criminal behavior; next, we shall review articles about the association between a personality disorder and the number of convictions, the onset of criminal behavior, and the association between an antisocial personality disorder and other disorders; and finally, we shall examine a study of mentally ill homicidal offenders.

Hodgins, Lapalme, and Toupin, (1999) studied 74 patients with schizophrenia in a 2-year follow-up study (after discharge). By the end of that period, only 15% had committed crimes, most violent. They found that a comorbid antisocial personality disorder was associated with criminality. In a report from the UK 700 trial, Moran et al. (2003) came to similar conclusions: psychotic patients with a comorbid personality disorder were 1.7 times more likely to have behaved violently over the 2-year period of the trial. An investigation of 94 patients in a maximum-

security psychiatric unit revealed that 36% of the patients with a DSM-IV Axis I diagnosis also met the criteria for an Axis II diagnosis. The most frequent association was between schizophrenia and an antisocial personality disorder (Rasmussen & Levander, 1996).

Inmates with a Major Mental Disorder plus a comorbid antisocial personality disorder had had more total convictions and more convictions for violent offenses (Hodgins & Côté, 1993a). In a small study by Steinert, Voellner, and Faust (1998), schizophrenic patients with an antisocial personality disorder had significantly more previous convictions and drug abuse in their history than patients without an antisocial personality disorder. With regard to the onset of criminality, patients with a Major Mental Disorder plus an antisocial personality disorder had an earlier onset of their criminal career, more convictions, and more convictions for nonviolent offenses than those without an antisocial personality disorder (Hodgins & Côté, 1993b). Moran & Hodgins (2004) found a strong association between a comorbid antisocial personality disorder and substance abuse, attention/concentration problems, and poor academic performance in childhood. In adulthood, there was a strong association between a comorbid antisocial personality disorder with alcohol abuse or dependence and the "Deficient Affective Experience" (Moran & Hodgins, 2004). The Deficient Affective Experience is determined by four items from the PCL-R: shallow affect, lack of remorse, lack of empathy, and "doesn't accept responsibility" (Hare, 1991). This is highly predictive of violent behavior (Cooke, Michie, Hart, & Clarke, 2004). However, they found no differences between patients with or without a comorbid personality disorder in either the course or the symptomatology of schizophrenia.

Finally, a retrospective study of 90 patients with a Major Mental Disorder (schizophrenia, schizoaffective disorder, or other psychosis) who had committed homicide revealed that a personality disorder accounted for 51% of the study group, and in 47% of the study group, this was an antisocial personality disorder (Putkonen et al., 2004). It was also striking that all subjects diagnosed with a personality disorder had a comorbid substance-related disorder.

Comorbidity of Schizophrenia and Psychopathy

First, we shall examine the association between psychotic disorders, psychopathy and violence; next, we shall describe some institutional outcome data; and finally, we shall examine the onset of schizophrenia and the number of arrests in patients with both schizophrenia and psychopathy.

Crocker et al. (2005) examined 203 patients with dual disorders (severe mental illness and a comorbid substance-related disorder) and their prospective relationship to criminality and violence over a period of 3 years. The scores on the Self-Report Psychopathy Scale (SRP-II) had only limited associations with criminality and violence. However, an antisocial personality disorder, thought disturbance, negative affect, and earlier age at psychiatric hospitalization were predictive of aggressive behavior. In a forensic psychiatric sample, Nedopil, Hollweg, Hartmann, and Jaser (1995) found a frequent association between psychopathy, substance abuse and personality disorders, and a lower comorbidity of psychopathy with dementia and schizophrenia. Finally, a comparison of aggressive ($N = 13$) and nonaggressive ($N = 13$) schizophrenic inpatients revealed that the aggressive patients had earlier starting problems and a higher score for psychopathy (Rasmussen, Levander, & Sletvold, 1995). Dolan and Davies (2006) examined the institutional outcomes (12 weeks postadmission to a medium secure unit in the UK) of 134 male patients with DSM-IV schizophrenia assessed using the PCL:SV (screening version of the PCL-R). The patients with high psychopathy scores were more likely to be violent, noncompliant with programs, engage in substance abuse violations, have criminal attitudes/peers, and have low levels of insight into risk and violence. Psychopathy was a modest predictor of institutional outcome. Tengström, Grann, Langström, and Kullgren (2000) found that psychopathy was strongly associated with violent recidivism. They studied 202 male schizophrenic offenders retrospectively with a mean follow-up of 51 months; 22% of them had a score on the PCL-R of 26 or higher, while 21% displayed violent recidivism. In the short-term prediction of violence, the symptoms of the illness may be more important than psychopathy for the accuracy of prediction. However, in the long-term

prediction of violence, information on risk factors derived from situational factors and relatively stable traits in personality (psychopathy) are important.

Finally, the comorbidity of schizophrenia and psychopathy was more common among violent patients than among nonviolent patients (Nolan, Volavka, Mohr, & Czobor, 1999). Higher psychopathy scores were associated with an earlier onset of schizophrenia and more arrests for both violent and nonviolent offenses.

DISCUSSION

In much of the existing literature (Munkner et al., 2003; Nijman, Cima, & Merckelbach, 2003; van Panhuis, 1997), it is often unclear whether the authors studied schizophrenic patients with or without a personality disorder. Although it has been affirmed in many studies that schizophrenic patients commit more violent offenses than the general population, the influence of comorbidity as a confounding factor is extremely high when the relevant literature is taken into account.

Compared to late starters, early starters more often have a diagnosis of substance abuse, are more often intoxicated at the time of the offense, and more often have parents that abuse alcohol or drugs. The distinction between early and late starters is important because early starters start criminal behavior younger, in a more severe fashion, and persist in this for a longer time (Tengström et al., 2001). Persons with schizophrenia that abuse alcohol or drugs have a higher number of criminal convictions and a greater chance of a criminal record. In schizophrenic offenders, the combination of substance abuse and a personality disorder increases the chance of a relapse.

A comorbid personality disorder, especially an antisocial personality disorder, is associated with criminal behavior. Psychotic patients with an antisocial personality disorder often start criminal behavior at a younger age and abuse more alcohol or drugs. The Deficient Affective Experience seems to be a promising predictor of violent behavior.

Only a few studies were found on the comorbidity of schizophrenia with psychopathy. Patients with high psychopathy scores were more likely to be violent, noncompliant with programs, engage in

substance abuse violations, have criminal attitudes/peers, and have low levels of insight into risk and violence. Psychopathy was also strongly associated with violent recidivism. Finally, the comorbidity of schizophrenia and psychopathy was more common among violent patients than among nonviolent patients.

Substance abuse and comorbid personality disorder (or psychopathy) have been confirmed as important risk factors by many authors. The combination of those risk factors as comorbidity in a single patient is highly explosive, and is often prevalent in psychotic offenders.

CONCLUSION

This review has revealed a high degree of agreement on the point that diagnostic comorbidity increases the chance of violence. Thus, possible comorbidity in schizophrenic patients should be routinely mentioned in scientific research as it has a significant effect on the course of the patient's illness. This high degree of agreement also leads to the conclusion that such comorbidity should be taken seriously when the patient's treatment program is being set up. In cases with such comorbidity, treatment of the psychotic disorder as such is not possible and not feasible, not only for the patient himself but also for the security of the community.

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The Violent Offender Treatment Program (VOTP): Development of a Treatment Program for Violent Patients in a High Security Psychiatric Hospital

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There are growing numbers of offenders with a mental illness convicted of violent behaviors in both the penal and mental health systems. To date however, there have been limited effective treatments reported for this population. This article describes the development, delivery and outcome of a pilot treatment program developed to meet this need (VOTP) within high secure psychiatric services. The program is based on current literature and clinical experience combined to provide a comprehensive theoretical model. The program thus account for theoretical and therapeutic content as well as responsivity and other delivery issues. The program is structured and manualized, multi modal, and delivered in approximately 280 hours of group therapy plus a range of weekly individual work and support. Staff training is an essential component of the work. So far, promising results are forthcoming. They include reductions in behavioral manifestations of violence, a decrease in perceived level of risk and an increase in coping and interpersonal skills.

The recent decrease in crime levels in the UK has not extended to violent crime. Between 2004 and 2005 there was an overall increase of 7% from the previous year (Coleman, Finney, & Kaiza, 2005). Home office statistics reveal that the majority of violent crimes reported to the police in 2004/05 (1,035,046 offences) were classed as violence against the person. Although the majority of incidents categorized as violent involve no significant injury to the victim; in 2004/2005 there were 859 deaths recorded as homicide in England and Wales (Coleman et al., 2005).

The association between violence and mental disorder remains controversial and frequently contested in academic and political circles (Pilgrim & Rogers, 2003; Rice & Harris, 1997; Russo, 1994). While the overall risk of violence linked with mental illness is minimal, a significant amount of crime perpetrated by individuals suffering from mental illness involves offences of harm against others (Cote & Hodgins, 1992; Mulvey, 1994). Shaw et al., (1999) examined the incidence of mental disorder in homicide convictions between 1996 and 1997 and

found that in 44% of cases, a diagnosis of mental disorder was specified in psychiatric court reports; and 14% of perpetrators were noted to have active symptoms of mental disorder at the time of the homicide.

Examination of prison populations highlights the growing prevalence of mentally disordered individuals within the criminal justice system. Hodgins (1995) estimates that between 6 and 10% of prisoners suffer from mental illness, while other studies indicate up to 90% of the prison population have a diagnosable mental disorder (Ogloff, Roesch, & Hart, 1994).

Individuals who suffer from mental illness and who commit criminal offences can be considered to be mentally disordered offenders (MDOs) (Rice & Harris, 1997). Home Office figures indicate that there were 3118 MDOs subject to restriction orders in hospitals in England and Wales in 2004 (Lily & Howard, 2004). Most MDOs present with histories of difficulties relating to a primary mental disorder and antisocial behavior. Typically, MDOs present with multiple problems, including severe affect

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regulation, cognitive deficits, poor social skills and, in many instances, a long history of substance misuse and a lifestyle reflective of criminal behavior (Rice & Harris, 1997). MDOs may be difficult to treat and manage, with low levels of motivation to engage in treatment and often poor outcomes.

The prevalence of violence within MDO populations is significantly higher than other types of offending. In 2003, 36% of those admitted to forensic psychiatric accommodation under a restriction order were either convicted or charged with acts of violence (Lily & Howard, 2004). Within high secure psychiatric services, the prevalence of those having committed a violent offence was 72.3%, compared to 8.4% for a sexual offence, 5.2% for arson and 14.2% other (Nottingham Healthcare NHS Trust Rampton Hospital figures March, 2006).

While agreement among clinicians about what constitutes appropriate treatment for MDOs is often elusive (Muller-Isberner & Hodgins, 2000), they typically present two categories of treatment needs: a) needs emanating from the specific diagnostic criteria associated with their mental disorder, and b) needs that have been identified as criminogenic i.e. that promote or are associated with criminal behavior (Andrews & Bonta, 1998; Taylor, 2003).

While there is an overlap in the criminogenic needs of violent MDOs and non-mentally disordered violent offenders (Bonta, Law, & Hanson, 1996), the treatment of MDOs has been characterized by a reliance on medication. There is support for the effectiveness of psychotropic medication in alleviating the symptoms of mental illness associated with violence (e.g., Citrome & Volavka, 2000), however others have cautioned that medication is not a panacea for the prevention and management of violent behavior among MDOs (Rice and Harris, 1993). Heilbrun and Griffin (1999) support the need for a psychological emphasis to treatment, suggesting that not all MDOs respond to neuroleptic medication. A significant proportion of MDOs classified as mentally ill also have a co-morbid personality disorder, which may complicate or inhibit successful pharmacological treatment (Coid, Kahtan, Gault, & Jarman, 1999; Taylor, 2003 Singleton, Meltzer, Gatward, Coid, & Deasy, 1998). The co-morbidity of severe mental illness with personality disorder (PD) is common, with estimates that between 30% and 60% of those with a psychotic disorder also have

a co-existing PD (Casey, 2000). It is notable that this proportion tends to be higher with inpatient populations.

Many evidence-based interventions for reducing offending behavior have been guided by the risk-need model (Andrews & Bonta, 2002). These interventions, generally in the form of offending behavior programs, are often grouped under the umbrella of "What Works" (McGuire, 1995, 2001). The meta-analytical reviews of treatment programs that adhere to the "What Works" principles have observed significant positive effects on recidivism (Dowden & Andrews, 1999a, 1999b; Losel, 2001). Thus, successful treatment outcome with offenders are characterized by targeting multiple needs (Lipsey, 1995), applying cognitive-behavioral/social learning strategies (Andrews, Dowden, & Gendreau, 2004), utilizing a skills orientated approach (Losel, 2001), and having a clearly defined relapse prevention component (Laws, 1999).

The provision of psychological treatment specifically to violent offenders is mainly limited to individual case studies (Browne & Howells, 1996) or the links between violence and anger (Howells & Hollin, 1989). Although the role of anger in violence is generally accepted with individuals who are pre-disposed to high levels of trait and state anger (Tafrate, Kassinove, & Dundin, 2002), the majority of violent offenders do not have pathological levels of anger (Serin & Kuriychuck, 1994). Consequently, the utility of exclusively anger focused treatment programs have been questioned particularly with instrumentally mediated violence (Howells, 1996) and must be questioned given the complexity of violence.

There are studies examining violent offender treatment programs, but there is a limited knowledge base for treating violent MDOs (Jones and Hollin, 2004; Polaschek, 2006). An explanation for the low knowledge base is offered by Howells (1996) who suggests that when compared to sex offenders, violent offenders attract disproportionately less attention in terms of both funding and professional interest. This lack of focus has further inhibited the systematic development of treatment programs specific to violence, despite the high prevalence rates associated with MDO populations.

Typically the treatment of violence has been primarily undertaken in prisons with non-mentally

ill populations (Polaschek & Reynolds, 2000). Several approaches, including the Cognitive Skills Training (Robinson, 1995) and the Cognitive Self Change program (Bush, 1995), show promise with violent offenders in terms of reduced reconviction rates. These programs target the attitudes, beliefs, and thinking patterns that support violent behavior by utilizing traditional cognitive therapy techniques aimed at assisting the offender to learn strategies for identifying, controlling, and restructuring the high risk thoughts associated with violence. In New Zealand, a program for violent offenders in a residential community based setting found reductions in frequency and seriousness of violent offending at a 2-year follow-up (Dixon & Behrnes, 1996). Examination of 5-year reconviction rates found a medium reduction in reconvictions for general offending, and a substantial reduction in violent reconvictions. This program was cognitive-behavioral in content and method but was delivered within a therapeutic community milieu in which group processes were used to develop trust and enhance skills practice and generalization.

While these studies provide some direction for the treatment of violence, most are intended for mainstream offender populations. Therefore their applicability and generalizability in relation to the specific needs of MDOs within health care settings can be questioned. There are no studies specifically of the effectiveness of a comprehensive, multi-component treatment intervention for MDOs with a presenting history of violence (Muller-Isberner & Hodgins, 2000). In response to a clearly evident need, a violent offender treatment program was developed within a high secure psychiatric hospital. Thus, the purpose of this paper is to describe the pilot delivery of the VOTP, specifically intended for MDOs, in conditions of maximum security.

METHODOLOGY

Program Development

In order to design a treatment program that will succeed in modifying violent behavior it is necessary to target factors associated with violent lifestyles. Therefore the first stage in developing the VOTP was to review the criminogenic factors associated

with violence and identify effective interventions to modify these factors. A number of programs were identified that have been used successfully within prison and other settings: these included the Violence Reduction Program (Wong & Gordon, 2002), Cognitive Skills Training (Ross & Fabiano, 1985), and Relapse Prevention (Laws, 1999). Other treatment strategies incorporated and adapted into the VOTP included emotion regulation strategies (Jones & Hollin, 2004; Linehan, 1994), social problem solving (D’Zurilla & Nezu, 1999; McMurren, 2005) and cognitive therapy for substance misuse (Beck, Wright, Newman & Liese, 1993). Furthermore, theoretical advances in aggression were considered utilizing ideas around motivation of the act (e.g. instrumentally and/or emotionally driven) and the recognition that the drive behind the aggression may change over time (Vitaro and Brendgen, 2005). The second stage of development involved adapting each of these treatment modalities to the needs of the targeted patient group and manualizing the content into deliverable treatment modules. This aim was achieved by focusing on the impact of mental illness and PD characteristics upon violent behavior and consideration of the responsibility factors associated with MDOs. The third developmental stage involved running the pilot program, evaluating its effectiveness with regards the program aims (including patient feedback) and adapting the program in response to this experience. The absence of evidence makes this third phase even more important in relation to communicating developments in treatment and establishing an evidence base.

Patient Selection

Fourteen patients were referred by their clinical teams for treatment of their violent behavior. Participants were assessed for suitability for inclusion in the VOTP by a specifically compiled assessment protocol identifying individuals at high risk of violent recidivism. Each patient referred to the group had an index offence of Assault Occasioning Actual Bodily Harm (AOABH), Grievous Bodily Harm (GBH), attempted murder, or murder: they all had a history of multiple institutional and community violence.

Measures

A range of measures were used as part of the pilot utilizing file review, clinical interview and behavioral observation. Psychometric tests were also used at the pre-and post-program stages of the treatment protocol. The measures were chosen to assess those factors linked to violence and targeted for change. They combine static, dynamic, and clinical variables to aid judgment of risk with treatment change.

Violence Risk Scale (VRS; Wong & Gordon, 2000). The VRS assesses risk of violent recidivism: it consists of 6 static and 20 dynamic risk factors linked to violence. The six static factors concern criminal behaviors (e.g., age at first violent conviction), or etiological factors (e.g., stability of family upbringing) related to risk of violent recidivism. The 20 dynamic factors that can reflect changes in risk are concerned with lifestyle, attitudes and behaviors, personality characteristics, and social support network. The VRS is administered through clinical interview and file review. Factors are rated on a 4-point scale with the total score representing the individual's current risk. The scoring range on the VRS is 0-78 with scores of below 30 = *low risk*, 31 to 45 = *medium risk*, and over 45 = *high risk* for violent recidivism. The dynamic factors that receive high ratings are potential treatment targets. The VRS utilizes the Stages of Change Model (Prochaska & DiClemente, 1984) to conceptualize and measure behavioral, attitudinal, and affective changes associated with the dynamic factors as a result of treatment. Progression through the stages indicates that the individual has improved and, as such, their risk rating should be lowered. One of the inclusion criteria for participants here is a VRS score of over 45.

The State Trait Anger Expression Inventory (STAXI-2; Spielberger, 1999). The STAXI-2 is a 57-item self-report questionnaire that measures state and trait domains of anger and level of anger expression and control. It is widely used for screening participants for offender-based interventions, treatment planning, and for evaluating treatment effectiveness.

The Psychological Inventory of Criminal Thinking Styles (PICTS; Walters, 2001). PICTS is an 80-item self-report measure designed to assess

eight thinking styles hypothesized to support and maintain a criminal lifestyle. The PICTS has four Factor Scales (problem avoidance, interpersonal hostility, self-assertion, and denial of harm), two general content scales (current criminal thinking and historical criminal thinking) and one special scale (fear of change).

Barratt Impulsivity Scale (BIS-11) (Patton, Stanford & Barratt, 1995). The BIS-11 is a 30-item self-report questionnaire that measures impulsiveness. Overall level of impulsiveness is defined by the three subscales of attentional impulsiveness, motor impulsiveness, and non-planning impulsiveness. The BIS-11 uses a 4-point Likert scale, with higher scores indicating a higher level of impulsivity.

Clinical Rating Form-Violence (Braham & Jones, 2007). The Clinical Rating Form-Violence was adapted (with permission) from Hogue's (1994) original format for sex offenders (Goal Attainment Scale). It consists of 12 areas that the treatment literature associates with re-offending and poor treatment gains, including empathy, insight, motivation, and attitude towards offence. Each of the areas are rated on a 5-point scale (-2 to +2) with a guide for scoring. Participants are rated by their respective clinical team at pre- and post-treatment, and at the following 4-monthly intervals. The assessment is completed independently of VOTP facilitators.

Program Delivery. Thirteen patients commenced the 14-month VOTP, each completed the pre- and post-group assessments. The Program was delivered through a bi-weekly 2-hour session, facilitated by two of the authors (a clinical psychologist and nurse consultant), plus support from two nurse facilitators who also acted as mentors offering one-to-one support to patients between sessions. This mentoring system is intended to augment the group sessions and increase the intensity of the treatment intervention. Typically the individual sessions provide an opportunity for enhanced skills coaching and practice, while allowing time to explore more personal issues related to offending and treatment.

Description of The Violent Offender Treatment Program (VOTP). The VOTP is a modular based cognitive-behavioral treatment program designed specifically for MDOs who present with violence. Specifically, the program is directed at those MDOs with a diagnosis of mental illness and/or PD who

require intensive treatment interventions on account of their high levels of risk of violence. Three violence categories are targeted by the VOTP: (1) symptom related violence, such as threat control override and acting on command hallucinations (see Link & Steuve, 1994; Braham, Trower & Birchwood, 2004); (2) violence mediated as a consequence of emotional reaction to symptomatology (and/or other experiences); and (3) violence independent of symptomatology, such as criminogenic factors like personality.

While certain diagnoses and symptoms of mental disorder are associated with violent offending, a number of studies (Bonta et al., 1998; Lindqvist & Skipworth, 2000; O’Kane & Bentall, 2000) examined predictors of recidivism in MDOs and found that similar factors predicted recidivism in MDO and non-mentally disordered populations.

The VOTP consists of 9 manualized treatment modules linked to criminogenic factors associated with violent recidivism that map on to a theoretical model¹ described (figure 1). The treatment modules (see figure 2) are delivered in four overlapping phases that reflect the trans-theoretical model of change (Prochaska & DiClemente, 1984). The module content of the program has been informed and developed from the ‘what works’ literature in relation to effective interventions for reducing violent recidivism (McGuire, 1995).

In many programs, participants’ motivation to change is wrongly assumed to be high. In adopting the trans-theoretical model of change as a guiding principle, the VOTP assumes that a participant’s level of motivation is a dynamic state, its level dependent on internal and external factors. Thus, the VOTP utilizes a style of delivery that reflects the principles of motivational interviewing as advocated by Miller and Rolnick (2002). Accordingly, the initial treatment phases centre on insight development and motivation, emphasizing personalized patterns of violence, ownership, and goal setting. Subsequent phases reflect skill acquisition and generalization, with a focus on development of intra-and inter-personal skills, as well as reframing thinking patterns and attitudes supportive of violence and criminal

behavior. The influence of mental illness, substance misuse, and personality difficulties on behavior are highlighted throughout. The final phase of the program accentuates skill maintenance and relapse prevention. Although the directions of the treatment phases are linear in nature, the motivation of participants is viewed as dynamic and cyclical and is focused on during all phases of the program. In addition, it was important to achieve the correct sequencing for the delivery of the program modules. Thus, the sequencing of the program modules reflects the four key stages of the VOTP: (1) getting on board; (2) developing awareness and problem ownership; (3) skills development; (4) practice and maintenance.

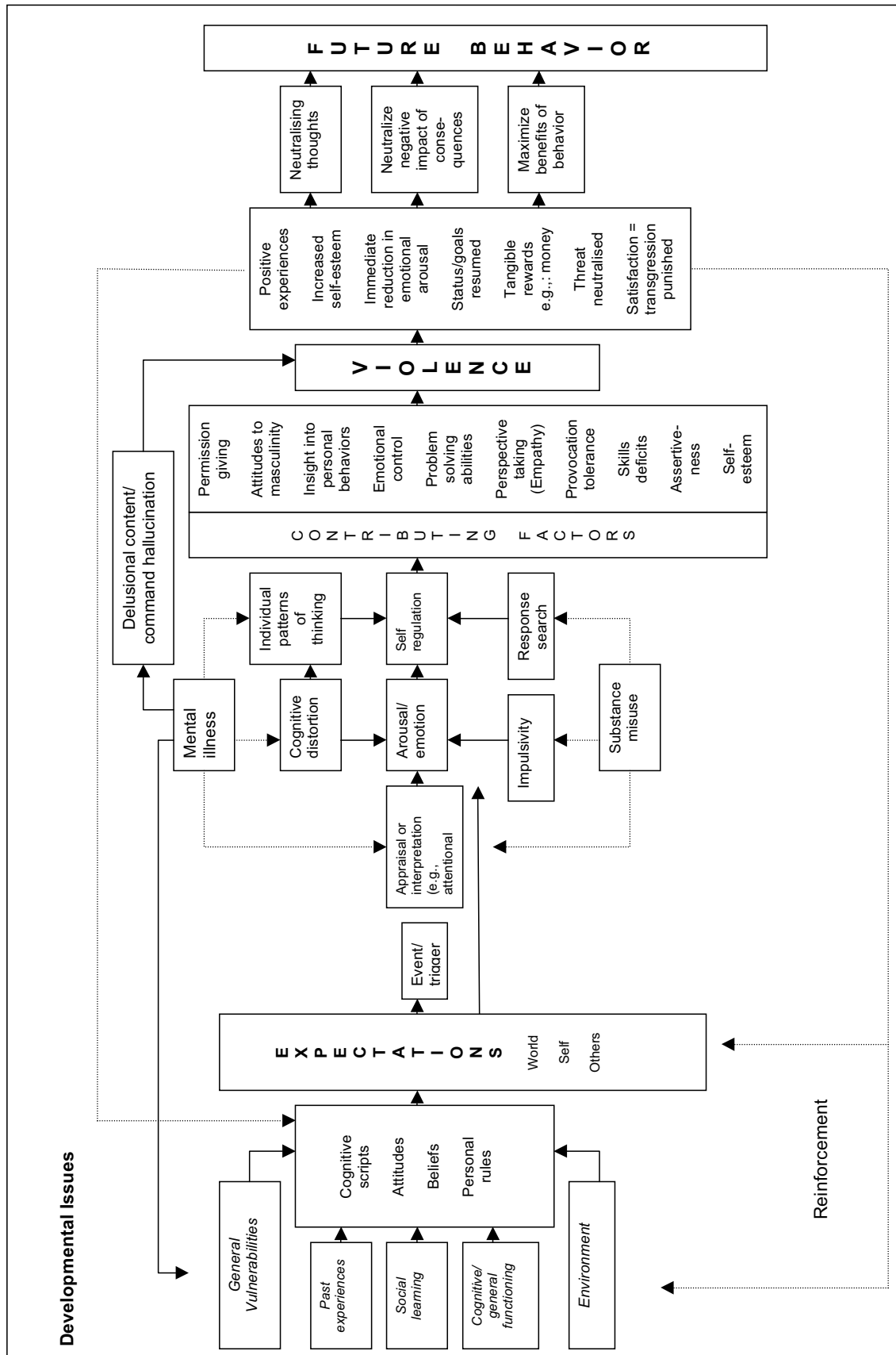
Treatment Phases

Getting on Board. MDOs are typically difficult to engage, with low motivation to participate in treatment (Howells & Day, 2003); they often display high dropout rates, poor attendance, low levels of attentiveness, and therapy-interfering behaviors (Linehan, 1984). All of these factors contribute to poor assimilation and generalization of skills and knowledge associated with positive treatment outcomes. Thus, the aims of the first stage of the VOTP are to engage and socialize participants into the process of group orientated treatments, initiate the therapeutic alliance, and develop personal requisites for successful integration and involvement with the program. The other aims at this stage include enhancing program affiliation and relationship and confidence building. As with anger management, to facilitate these aims, the activities and content of this module initially centre on increasing self-efficacy and confidence as well as familiarizing patients with the demands of groupwork (Jones & Hollin, 2004).

Engaging MDOs with psychological interventions presents numerous challenges. Consequently, motivational interviewing techniques are utilized to help individuals explore their reasons for attending the group, to elicit self-motivational statements, and to set personal targets in relation to personal violence. Group exercises are paramount in considering the advantages and disadvantages for attending, as well as creating dissonance between the individual’s current pattern of behaviors and where they would like to be in the future. Within the VOTP, there is an emphasis on establishing an honest and open

¹ This model was in part developed by a working team considering violence and the VOTP and will be published in a forthcoming paper. The contributors to this model are Braham, L., Jones, D., Bell, R., Green, M., and Hughes, G.

Figure 1
The VOTP Theoretical Model of Violence



relationship between group facilitators and group participants. The therapeutic alliance has been identified as a significant catalyst with regard to successful outcomes in psychological intervention (Marshall & Serran, 2004) and thus is an important aspect of the treatment.

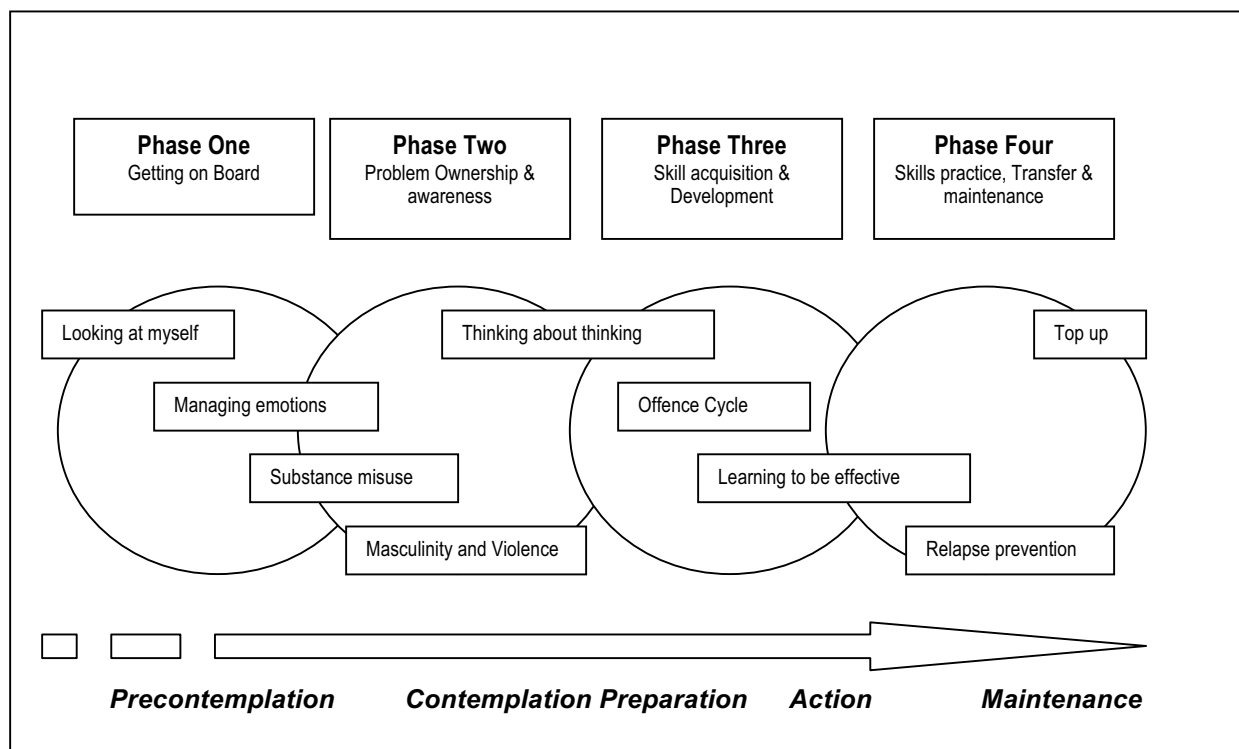
Developing Awareness and Problem Ownership.

The second stage within the VOTP is developing awareness. A lack of insight can act as a barrier, with participants failing to see the negative impacts of their behavior and the need for change. Problem ownership may also be difficult as many people with anger problems are unaware of the triggers for their episodes and may have little or no perception of how they act when they are angry or how others view their actions (Kassinove & Tafrate, 2002). In line with the trans-theoretical model of change, this stage of the VOTP is necessary for movement from a pre-contemplative to a complete stage of change. Within this phase, various topics associated with violence are considered, including managing emotions and emotional regulation, substance

misuse, aspects of masculinity, and specific cognitions linked to increasing the likelihood of violence. Time is also spent considering each individual's offending cycles, and looking at cognitive and behavioral aspects of their offending. Initially, a psycho-educational approach is used, but as the module progresses, the emphasis changes to a more personalized perspective in order to assist patients to develop their own violence profile. Clearly an integral part of this process lies in the development of an understanding of the interplay between cognition and violent behaviors. Patients are encouraged to keep diaries and to learn to self-monitor their violence related experiences, including their thoughts and actions. Importantly, at the end of this stage individuals will have some awareness of their behavior and will "own" it as their problem.

Skill Development. The third stage focuses on skill development, covering a number of aspects of the skills required to tackle the cognitive and behavioral aspects of violence. Problem-solving is an important aspect of finding a solution to the

Figure 2
VOtP Treatment Model



difficulties which may arise. This stage considers being effective within social interactions, including assertiveness and coping with distress (Linehan, 1984). Patients learn how to review the risk factors that take them closer to behaving in a violent manner and how to personalize them according to their circumstances. This key stage of the program focuses on moving patients from contemplation through preparation to action within the trans-theoretical model of change.

A problem often encountered with skill-based programs lies in the transfer and maintenance of acquired skills (Feindler & Ecton, 1986). Therefore attention is paid to emphasizing and implementing skill development to bring about change and in developing contingency plans to maximize skill generalization after program completion. Within skill development, arousal reduction techniques are taught and personalized self-statements developed. Patients are also introduced to the principles of avoidance and escape when faced with a difficulty. Interpersonal skills are introduced through role-play, modeling, and practice with the key requirement that such skills can be generalized to various situations. At the end of this stage, patients will be aware of specific areas of difficulty, be able to identify their own high risk situations, and have an action plan to deal with those potential events drawing on the skills acquired.

Skills Practice and Maintenance. Within this final stage of the program, patients are encouraged to practice their skills in everyday situations. Patients explore issues during the group sessions and practice the relevant skills throughout the week, reporting their progress back to the group. To maintain progress, a relapse prevention module is offered to everyone who has completed the program.

Session Structure. Each session starts with a “check-in”, requiring group members, including facilitators, to share their experiences of the week with regard to any experiences of anger or potentially violent outbursts. The situation, how it was dealt with, and how it could have been better dealt with, is discussed among the group. The check-in also includes any relevant issues related to mental health and mood. The check-in thus helps patients make the link between their own experiences of mental health difficulties and their ability to deal with interpersonal problems in an effective manner.

Following the check-in, a homework review is carried out and, where indicated, includes discussions regarding task completion. Homework tasks are set towards the end of each session and are a fundamental aspect of the program. Homework assignments are short task-orientated activities, directly aimed at enhancing skill and knowledge assimilation related to module objectives. All homework assignments are reviewed with the wider group, so that group members can benefit from each other’s experiences. The remaining part of the session is delivered according to the program manual. Each session is concluded with a checking-out procedure that allows all participants to state what they liked and disliked about the session and what areas they have found most helpful or unhelpful in relation to their target problem area.

Program Delivery. Arguably, persistently violent MDOs require more intensive interventions, characterized by increased frequency of sessions the duration of program. The VOTP is delivered on a twice weekly basis using 2x2 hour sessions over a 14-month period: the total therapeutic investment equates to approximately 220 hours within the group treatment setting. The delivery of the weekly group program is supported by individual weekly sessions to clarify, reinforce, practice, and explore the issues and skills that are taught during the group sessions. This focus is a move away from traditional manualized programs, which have often been criticized for neglecting the individual (Hollin, 2002). Akin to the intensity of the program, there is a need to acknowledge the principles of responsivity: thus a range of techniques are employed within the twice weekly session to ensure appropriate flexible program delivery. These multi-model techniques include discussion, debate, role-play, modeling, use of television clips, magazines, and video work. The main emphasis in the delivery of the VOTP is a move away from a didactic delivery style in favor of a more interactive approach promoting greater participation.

Auxiliary Activities. An important philosophy of the VOTP is the integration of the treatment protocol with the other components of the patient’s treatment, so extending the VOTP treatment initiatives beyond the therapy room into the wider clinical environment. This aim requires effective communication between group facilitators, ward-based staff, and other clinical team members. To augment this process, all members

of the Clinical Team involved with VOTP patients were offered a 3-day training package to give them the basic skills to help patients generalize behaviors and implement skills taught within the program. The training also provides the background and theoretical basis on which the program is built, as well as practical application of CBT skills to offender treatment.

All participants are given a workbook for their current module which contains exercises, learning tips, skill practice, and theory. The workbook is annotated with a central cartoon character who is used throughout the program to illustrate key learning points. The use of a cartoon is a non

threatening strategy to highlight antisocial behaviors with patients and to assist in changing aspects of their behavior and underlying beliefs. It also then forms the basis for a personalized relapse prevention plan.

Results

The 13 patients referred to the program were deemed suitable on the basis of their VRS scores and their violent and criminal history and commenced the program. In all, 10 patients completed the program with an average attendance of 89 out of

Table 1

Patient	Age	Diagnosis	Reason for Admission	Length of Time in Hospital	Substance Misuse History	Sessions Attended
1	41	Mental illness/ Personality Disorder	Murder	6 years	Yes	92
2	38	Mental illness/ Personality Disorder	Serious Assault	5 years	Yes	86
3	40	Mental illness/ Personality Disorder	Murder	15 years	Yes	88
4	42	Mental Illness	Murder	8 years	Yes	88
5	29	Mental illness/ Personality Disorder	Serious Assault	5 years	Yes	90
6	37	Mental illness/ Personality Disorder	Serious Assault	6 years	Yes	89
7	36	Mental illness/ Personality Disorder	Murder	9 years	Yes	90
8	38	Mental illness/ Personality Disorder	Manslaughter	10 years	Yes	87
9	43	Mental illness/	Serious Assault	8 years	Yes	91
10	43	Mental illness/ Personality Disorder	Serious Assault	15 years	yes	90

92 sessions. Of the three patients who dropped out, one left after 2 sessions, another dropped out after 6 sessions, and the third patient attended 51 sessions before refusing to attend any longer. All three of these patients were re-referred to the next VOTP program and were reassessed using the same pre-treatment assessment protocol. The pilot results are presented for the 10 patients who completed treatment.

Psychometric Scales. The VRS scores before and after treatment are presented in Table 2. At the pre-treatment stage all participants fell within the high risk range for violent recidivism. At post-treatment the score for dynamic risk factors and the subsequent total score showed decreases, indicating a lower level of risk for violent recidivism.

The STAXI-2 Scores before and after treatment are presented in Table 3. The preferred direction of change is a decrease on all scales except anger control which should increase. The STAXI-2 scores showed decreases in state and trait anger and outward anger expression, and an increase in outward anger control.

The post-treatment scores for the BIS-11 (see Table 4) showed improvements within all four domains of the scale, indicating lower levels of impulsivity.

The post-treatment scores for the PICTS (see Table 5) also showed reductions across all components of the scale, with noticeable decreases in relation to a number of thinking styles, current criminal thinking and historical criminal thinking, and interpersonal hostility.

Using the Clinical Rating Form, as shown in Table 6, an independent rating by the participant's Clinical Team indicated improvements at the 8-month and end of treatment stages. Most noticeable improvements occurred within the domains of acceptance of guilt for offence, acceptance of personal responsibility, increased empathy, and a reduced tendency to minimize the consequences of violence. Important improvements were also observed with regards to level of disclosure, treatment participation, and motivation to change.

DISCUSSION

The VOTP is a new initiative developed in response to the paucity of treatments for MDOs who commit very serious violent offences. The purpose

of this pilot study was to provide a preliminary examination of the effectiveness of this program within a high security psychiatric setting with patients with a history of poor treatment engagement, previous treatment failure, and low attendance and completion rates.

Many components of the VOTP are to be found in standard CBT treatments for offenders. The sequencing, duration, and compilation of the program modules into a singular treatment pathway, plus the mentoring and responsivity of the program represents a departure from more traditional treatment approaches. The sequencing of the modules in the four phases, moving from awareness and ownership of problems to skill development and transfer, work in a building block type fashion with regards to skill assimilation and development.

In terms of program design the use of individual sessions to support the group work maintained the individual focus while offering support and motivation. As with a previous study (Jones & Hollin, 2004), the role of mentors in delivering individual sessions and supporting individual patients assisted significantly in intensifying the therapeutic process.

Time spent in treatment is an important marker for successful treatment outcome and non completion and poor attendance is endemic to offender treatment interventions (Prendergast, Farabee, Cartier, & Henkin, 2002; Wormith & Oliver, 2002). Consequently, an important consideration when planning and delivering treatment programs is the need to acknowledge the responsivity principle (Andrews et al., 2004). Within the VOTP the high levels of attendance, attentiveness, homework compliance, and contributions within sessions, suggest that program delivery was pitched at the right level for this patient group. The feedback from patients indicated their appreciation of the departure from a didactic teaching philosophy, to one embracing a more interactive and skills orientated approach. Additionally, program materials such as participant workbooks (as opposed to handouts and overheads) allowed patients to follow the program, keep all their information together, take their own notes, and ultimately take responsibility for their program materials and development.

While the program took full note of responsivity into both its design and delivery, there was still attrition, as three patients dropped out of the

Table 2
Mean Pre- and Post- Treatment Scores on Violence Risk Scale

	Static Score	Dynamic Score	Total Score
Pre-	11.8 (2.89)	48.5 (6.85)	60.2 (8.72)
Post-	11.8 (4.81)	(2.89) 42.9	31.1 (5.66)

Table 3
Mean Pre- and Post- Treatment Scores on STAXI-2

	State Anger	Trait Anger	Anger Expression Outwards	Anger Control Outwards
Pre-	25.14 (14.46)	19.7 (4.69)	18.5 (4.52)	20.4 (5.08)
Post-	15.5 (0.84)	14.2 (3.45)	14.9 (3.10)	26.7 (4.66)

Table 4
Mean Pre- and Post- Treatment Scores Barratt Impulsivity Scale

	Motor	Attentional	Non Planning	Total Score
Pre-	22.4 (5.64)	21.6 (4.62)	27.7 (6.34)	71.9 (13.96)
Post-	16.3 (3.52)	16.4 (4.06)	21.6 (4.35)	50.7 (15.06)

Note: all standard deviations in parentheses.

Table 5
Mean Pre- and Post- Treatment T-Scores on PICTS

Thinking Styles	Pre-	Post-
Mollification	61.3 (14.4)	53.5 (7.89)
Cut-off	64.8 (16.5)	51.6 (9.03)
Entitlement	61.7 (14.6)	49.2 (5.88)
Power Orientation	60.2 (13.5)	50.6 (8.46)
Sentimentality	53.9 (16.1)	45.3 (8.66)
Super-optimism	56.9 (17.01)	51.4 (11.2)
Cognitive Indolence	54.2 (9.5)	49.8 (7.39)
Discontinuity	57.6 (8.5)	53.2 (7.06)
Content Scales		
Current Criminal Thinking	59.5 (13.3)	49.8 (7.75)
Historical Criminal thinking	63.1 (17.5)	53.4 (8.77)
Factor Scales		
Problem Avoidance	57.2 (12.7)	50.6 (5.44)
Interpersonal hostility	65.1 (27.5)	47.7 (5.58)
Self Assertion	62.4 (10.8)	54 (8.81)
Denial of Harm	53.8 (12.9)	43.5 (7.07)
Special Scale		
Fear of Change	64.1 (16.4)	53.5 (10.69)

Note. Standard Deviations in parentheses

Table 6
Mean Treatment Scores on Clinical Rating Form

	Start of Treatment	4 Months	8 months	End of Treatment
Acceptance of Guilt for Offence(s)	-1.1 (0.31)	-1 (0.47)	0 (0.94)	0.2 (0.78)
Shows Insight into Victim Issues	-1.1 (0.31)	-0.7 (0.48)	-0.4 (0.69)	0.2 (0.91)
Demonstrates Empathy	-1.2 (0.42)	-0.7 (0.48)	-0.3 (0.48)	0 (0.81)
Acceptance of Personal Responsibility	-1 (0.47)	-1.2 (0.42)	-0.3 (0.94)	0.2 (1.13)
Recognizes Cognitive Distortions	-1.1 (0.73)	-1.3 (0.67)	-0.2 (0.63)	0.1 (0.73)
Minimizes Consequences of Violence	-1.3 (0.48)	-0.9 (0.31)	0.1 (0.56)	0.4 (0.69)
Understands Role of Lifestyle Dynamics	-0.6 (0.84)	-0.6 (0.51)	-0.2 (0.63)	0.3 (0.82)
Understands own Offence Cycle	-0.8 (0.78)	-0.6 (0.69)	0.1 (0.73)	0.4 (0.84)
Identifies with Relapse Prevention Plan	-1.3 (0.48)	-1 (0.81)	-0.3 (0.82)	-0.2 (0.91)
Level of Personal Disclosure	-0.8 (1.03)	-0.5 (0.97)	0.6 (0.84)	1 (0.81)
Treatment Participation	-0.3 (0.67)	0.1 (0.87)	0.9 (0.73)	1 (0.66)
Motivation to Change	-0.7 (0.67)	-0.5 (0.7)	0.4 (0.84)	0.5 (0.84)
Total Score	-11.1 (5.06)	-8.9 (5.23)	0.4 (6.51)	4.1 (7.72)

Note. Standard Deviations in parentheses

treatment program. While this figure is relatively low compared to other studies examining treatment drop out (e.g. Wormith & Oliver, 2002), non-compliance with treatment regimes often denotes a reluctance to recognize its necessity and has been linked to violent and general recidivism (Hanson & Bussiere, 1996; Losel, Kofler, & Weber, 1987). Indeed, reassessment for the next program of the three patients who dropped out showed increased levels of risk in relation to VRS scores which was supported by increased rates of institutional aggression.

Attempts to understand why these patients dropped out of treatment is vital when considering future treatment planning and delivery. Treatment retention and attrition can be conceptualized in terms of the offender readiness model (Ward, Day, Howells, & Birgden, 2004). The concept of "readiness to change" can be broadly defined as the characteristics of the offender or the therapeutic situation likely to promote engagement and enhance therapeutic change (Howells & Day, 2003). In terms of the 3 patients who dropped out of the program a post-group interview established that their low readiness to change was due to various 'barriers to change' (e.g., Chew, Palmer, Slonka, & Subbiah, 2002). These barriers were related to negative attitudes towards treatment; with a mistrust of staff and treatment pessimism; an inability to see violence as a problem and that it is unlikely to reoccur (problem minimization); and general beliefs about their inability to bring about change (low self-efficacy).

The pilot data are of limited scope in terms of the sample size, assessment modality, and absence of a follow-up. Furthermore, the current results cannot be generalized outside of secure psychiatric provision as the program was designed specifically for MDOs. However, the data do show a positive direction of change pre- and post-treatment across the assessment scales. Psychometric tests showed a positive direction for change in terms of impulsivity, criminal thinking, and anger experience. Unlike the self-report measures, the VRS is designed specifically to assess the risk of violent recidivism for institutionalized forensic clients who are a risk to the community. Post-treatment scores indicated a transition from high to medium risk according to this scale. The improvements observed and recorded post-treatment by the clinical teams using the clinical

rating form were supported anecdotally by the fact that within one year of completing the VOTP seven of the ten participating patients had been transferred to conditions of lower security. Remaining patients moved to less secure areas within the hospital indicating lower levels of presenting risk. This gives us some confidence in the sensitivity of measures for use in a fuller evaluation of the program.

In summary, the findings from this preliminary study are encouraging and provide support for further use of this program with MDOs within high secure settings. The small sample and absence of a control group naturally limit this study's generalizability, but there are good grounds for optimism with regards the efficacy of this program for reducing violent recidivism in this population. The future steps for the VOTP centre on using a more sophisticated design that incorporates waiting list controls and additional outcome measures, including behavioral monitoring of aggressive and institutional behavior. Further, links have been made with staff in medium and low security to form a working group to deliver the program in those settings and to focus on adaptations for different levels of security.

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Risk Assessment in Forensic Patients with Schizophrenia: The Predictive Validity of Actuarial Scales and Symptom Severity for Offending and Violence over 8 – 10 Years

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Assessment of risk of violence is essential in the management of patients with schizophrenia admitted to secure hospitals. The present study was conducted to test the validity of actuarial measures and psychotic symptoms in the prediction of further violence and offending in this group. The H-10 scale of the HCR-20, Violence Risk Appraisal Guide and Psychopathy Checklist-Revised were scored retrospectively. Symptom severity was rated at interview and persistence from notes. Outcome was measured using criminal records and recorded incidents of aggression over an 8-10 year period. Seventy-six percent of patients were involved in more than 1800 incidents defined as physical contact with a victim or damage to property, and 28% in a serious incident defined as injury to a victim requiring hospital treatment, a contact sexual incident or fire setting. Fifteen percent of patients were convicted of any offense and 5% of a violent offense. The risk scales had moderate to high predictive accuracy for offenses and violent offenses but failed to predict incidents or serious incidents. Symptom severity and persistence predicted incidents but not offenses. Violence within this population is common. Actuarial measures of risk assessment are valid predictors of offending and violent offending but psychotic symptoms are more relevant to the prediction of violent incidents. Assessments of likely inpatient aggression must emphasize symptoms.

There is a modest but significant relationship between schizophrenia and violence (Walsh, 2001). Factors associated with violence in schizophrenia include variables associated with violence in non mentally ill individuals (such as male gender, young age, alcohol and substance misuse, childhood conduct disorder, and adult antisocial and criminal behavior (Bonta, Law, & Hansen, 1998) and variables related to psychotic illness, particularly positive symptoms (Link, Andrews, & Cullen, 1992). The small minority of patients with schizophrenia who commit serious acts of violence are usually detained in secure psychiatric hospitals. Schizophrenia is the most common primary diagnosis in patients detained in high-security hospitals in the UK (Thomson, Bogue, Humphreys, Owens, & Johnstone, 1997; Taylor, Leese, Williams, & Butwell, 1998).

As with any patients with severe mental illness alleviating symptoms and maximizing social functioning are important management goals, but a key task is the assessment and management of the risk of further violence. A number of methods of risk assessment have been developed in North America but there have been few studies on their predictive validity in the UK (Doyle, Dolan, & McGovern, 2002; Gray et al., 2003, 2004). The emphasis in these measures is on historical criminogenic variables. They have been found to predict violent recidivism with moderate to high accuracy in forensic psychiatric patients and prisoners (Dolan & Doyle, 2000). They do not take into account symptoms of mental illness; however, such symptoms play an important role in the aggression that leads to the admission of patients with schizophrenia to high

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security hospitals (Taylor et al., 1998; Thomson et al., 1997). The aim of this study was to test the predictive validity of three commonly cited actuarial measures: Violence Risk Appraisal Guide (VRAG; Harris, Rice, & Quinsey, 1993); the Historical (H-10) scale of the Historical Clinical Risk Management-20 (HCR-20; Webster, Douglas, Eaves, & Hart, 1997); and the Psychopathy Checklist-Revised (PCL-R; Hare, 1991); as well as the symptom severity and persistence in the prediction of further violence and offending in a cross-sectional cohort of patients with schizophrenia detained in a high security psychiatric hospital over a follow-up period of 8-10 years.

METHOD

Setting

The State Hospital is the high-security hospital for Scotland and Northern Ireland. It has 240 beds and admits patients with a mental disorder who are detained under relevant mental health or criminal procedure legislation from courts, prisons and other hospitals.

Sample

The participants were 169 patients with schizophrenia identified in the State Hospital Survey, the detailed methodology of which is reported elsewhere (Thomson et al., 1997). In brief, the 241 patients resident in the State Hospital between 25 August 1992 and 30 September 1993 were interviewed (including scoring of the Krawiecka rating scale), clinical records were examined, and psychiatrists and nurses were interviewed. Patients who were included all conformed to the St. Louis criteria (Feighner, Robins, & Guze, 1972) for schizophrenia. Patients were admitted to the State Hospital on account of their "dangerous, violent or criminal propensities" (National Health Service [Scotland] Act 1978 S.102): 63 (37%) were admitted because of behavioral problems, usually violence to another person (71%), and 106 (64%) had committed an offense, which was usually serious.

Risk Assessment Scales

The VRAG (Harris et al., 1993) was developed from data on the factors associated with recidivism in male mentally disordered offenders discharged from a Canadian high-security hospital. It has 12 items each of which has an integer weighting ranging from -5 to 12. The range of total scores (from -26 to 38) can be divided into nine "bins", each of which is associated with a reported percentage probability of violent recidivism at 7- and 9-year follow-up.

The HCR-20 (Webster et al., 1997) was developed from examination of the literature on violence risk in mentally disordered offenders and is intended to be used as structured clinical guidance. There are 10 historical items, five clinical items and five risk management items. In clinical practice the clinical and risk items must be reevaluated as a person's circumstances and clinical state change. In this study, the Historical scale (H-10) was used alone as an actuarial measure. For research purposes, the items are scored on a 3-point scale from 0 to 2 and the H-10 total can therefore range from 0 to 20. The H-10 is often regarded as the most robust of the three HCR-20 scales in predicting violence (e.g., Belfrage, Fransson, & Strand, 2000).

The Psychopathy Checklist-Revised (PCL-R; Hare, 1991) contains 20 items, each scored on a 3-point scale from 0 to 2, giving a total score ranging from 0 to 40. It was developed as a measure of the extent to which an individual matches Cleckley's (1941) description of the prototypical psychopath, and has been found to be a good predictor of violent recidivism (Dolan & Doyle, 2000). The cut-off to make a diagnosis of psychopathy has been found to be culturally mediated. For the UK Cooke and Michie (1999) suggested that a score of 25 or above was diagnostic of psychopathy, and a score of 15-24 indicated a moderate degree of psychopathy. The PCL-R was not designed as a risk assessment scale but is incorporated in the VRAG and an assessment of the presence of psychopathy is required in the H-10. The items comprising each of the three scales are shown in Table 1.

Procedure

State Hospital clinical records were examined to code the VRAG, H-10 and PCL-R retrospectively. The three scales were scored using information documented before 1st January 1994. By this date 51 (30.2%) patients had left the State Hospital, so for these patients the scales were scored using information documented until the date they left.

The researcher coding the three scales (MD) was blind to outcome and completed formal training in the use of the PCL-R and HCR-20. The H-10 and PCL-R were coded using the guidelines provided in the manuals. The VRAG was rated using the instructions available in Quinsey, Harris, Rice and Cormier (1998) with clarification provided by one of VRAG's authors (Dr. Catherine Cormier).

Psychotic symptoms. The standardized psychiatric assessment for chronic psychotic disorders rating scale (Krawiecka, Goldberg, & Vaughan, 1977) was completed by patient interview in 1992

or 1993. The Manchester or Krawiecka scale consists of eight items: depression, anxiety, coherent delusions, hallucinations, incoherence and irrelevance of speech, poverty of speech, flattened or incongruous affect, and psychomotor retardation. Each of these items is scored on the basis of severity of symptoms from 0 to 4. It is an effective instrument in measuring symptom change. A study comparing the Manchester Scale and the Brief Psychiatric Rating Scale (Overall & Gorham, 1962) found that the former had better interrater reliability than the latter and concluded that the Manchester Scale was a suitable alternative to the BPRS (Manchanda, Saupe, & Hirsch, 1986).

Persistence of psychotic symptoms was assessed from patients' clinical records during the follow-up period from 1992-2001. For each year, a rating was made as to whether a patient definitely, probably, possibly or did not suffer from delusions, hallucinations or thought disorder. The proportion of years with positive symptoms (PYPS) was calculated by

Table 1
Items of Risk Assessment Scales

Violence Risk Appraisal Guide Factors (Weighting)	HCR-20 Historical Factors	PCL-R Factors
History of alcohol problems (.13)	Previous violence	Glibness/Superficial Charm
Diagnosis of Schizophrenia (-.17)	Young age at first violent incident	Grandiose sense of self worth
Diagnosis of Personality Disorder (.26)	Relationship instability	Need for stimulation/proneness to boredom
Psychopathy (.34)	Employment problems	Pathological lying
Elementary school maladjustment (.31)	Substance use problems	Conning/manipulative
Separation from biological parents before 16 years of age (.25)	Major mental illness	Lack of remorse or guilt
Age at index event (Young .26)	Psychopathy	Shallow affect
Nonviolent offense history (.20)	Early maladjustment	Lack of empathy
Victim injury at index offense (-.16)	Personality disorder	Parasitic lifestyle
Female victim at index event (-.11)	Prior supervision failure	Poor behavioral controls
Failure on prior conditional release (.24)		Promiscuous sexual behavior
Marital status (Single .18)		Early behavioral problems
		Lack of realistic, long-term goals
		Impulsivity
		Irresponsibility
		Failure to accept responsibility for actions
		Many short-term marital relationships
		Juvenile delinquency
		Revocation of conditional release
		Criminal versatility

dividing the number of years where the patient had definite or probable symptoms by the number of years of follow-up.

Outcome measures. Data on violent incidents and criminal recidivism were collected as part of a wider study of the long-term outcomes of these patients. Records from 1992-2001 were examined from the State Hospital (including a computerized incident database), all subsequent psychiatric services that patients had contact with, any relevant prison, and the Scottish Criminal Records Office (SCRO). Data were collected on progress from high security care towards the community, legal status, adverse incidents (including violence, self-harm and absconding), course of illness, physical morbidity, treatment and social circumstances.

The outcome variables of readmission, violent incidents and offending are examined here. The definitions of outcomes were:

- “Incident”: Any aggressive incident involving physical contact with a victim, any sexual incident (including exposure and touching), or any episode of physical aggression towards property (including fire-setting).
- “Serious incident”: Any aggressive incident resulting in death or injury requiring hospital treatment, any sexual incident involving contact with the victim, or any fire-setting.
- “Offense”: Any conviction (including nonviolent offenses).
- “Violent offense”: Any conviction for assault, serious assault, fire-setting/raising or contact sexual offense.

Time at risk of an outcome event was from 1 January 1994 to 31 December 2001 (eight years) for patients who remained in the State Hospital on 1 January, 1994, or from date of discharge until 31 December 2001 for the 51 patients who had been discharged before this date.

Ethical Approval

Approval for the study was granted by the Multi-Centre Research Ethics Committee for Scotland, all relevant Local Research Ethics Committees, and the Scottish Prison Service.

Statistical Analysis

Comparison of patients with and without outcome. Patients with or without an outcome event (incident or offense or readmission) during the follow-up period were compared in relation to predictor variables (risk assessment scores, Krawiecka scores and PYPs) by comparing the mean scores of patients with and without the outcome and by using Receiver Operating Characteristic (ROC) analysis.

ROC analysis is recommended for use in the area of violence risk assessment (Mossman, 1994) because it is unaffected by the base rate of the criterion variable in the sample. In addition, ROC analysis has been used in several other violence risk assessment studies. ROC curves plot the true positive rate (sensitivity) against the false positive rate (1-specificity) for a series of cut-off points across the test's measurement range (Fuller & Cowan, 1999). The area under the curve (AUC) indicates the overall accuracy of the predictor, and represents the probability that a randomly selected violent person would be rated as more likely to be violent than a randomly selected nonviolent person. AUCs range from 0 (perfect negative prediction), through .5 (chance), to 1.0 (perfect positive prediction). Values of .70 to .75 indicate moderate to large discriminatory accuracy, and .75 and over indicate large discriminatory accuracy.

Relationship between predictor variables and frequency of incidents. Frequency of offenses was not examined in relation to predictor variables due to the low number of offenses in the sample. Frequency of incidents was calculated by dividing the number of incidents for each patient by the total number of weeks for which case note data were available. To examine the relationship between predictor variables and frequency of incidents we used two methods: correlations and ROC analyses. Spearman's rho (r_s) was used to correlate scores for the predictor variables and frequency of incidents. ROC analyses were used to examine the ability of the scales to predict categorization of outcome determined by the frequency of incidents. For these analyses the patients were divided into outcome groups determined by percentiles applied to the number of incidents per year. The percentiles used were the median (i.e. splitting the group into two

outcome groups of about equal size), the 75th percentile and the 90th percentile.

RESULTS

Excluded Patients and Missing Data

Data to rate risk assessment scales were not available for 5 patients: three patients had died before 1/1/1994 and notes were unobtainable in two cases. Therefore, H-10 and VRAG scores were available for 164 patients. PCL-R adjusted totals were available for 161 patients due to paucity of information in the clinical records of 3 patients. Clinical record outcome data were incomplete for 21 additional patients (5 patients who died after 1994 and 16 patients whose records from subsequent services were unavailable). Therefore, there were 29 patients for whom risk assessment or clinical record data were incomplete. Analyses for incident outcomes were completed on the remaining 140 patients.

Scores on the Krawiecka rating scale were only available for 132 (94.3%) out of 140 patients, so eight patients were excluded from the analyses using this scale. Data on persistence of positive symptoms were available for all 140 patients. SCRO data were available for 135 (96.4%) of the 140 patients, so five participants were excluded from analyses for offense outcomes. There were no significant differences between excluded and included patients in terms of baseline variables, outcome variables (where available), or scores on the five predictor measures (where available).

Sample

The baseline characteristics of the sample are shown in Table 2. The outcomes of interest in this study were incidents and offenses. The progress of patients from high security care through intermediate levels towards the community is relevant to whether a patient is likely to be convicted. Data on these outcomes is therefore presented in Table 3. The majority of patients (107) left high security care, but a minority (54) reached the community during the follow-up period. Of those who reached the community 22 spent none of their time in the

community under any form of compulsory legal order whereas 13 spent all of their time under such an order.

Of the 140 patients included in the study the length of follow-up was eight years for 102 cases, eight to nine years for 31 cases and between nine to ten years for seven cases. The mean length of follow-up was 8.74 years.

Outcome Data

One hundred and seven (76%) participants were involved in at least one incident and 39 (28%) were involved in at least one serious incident. The mean number of incidents in which patients were involved was 11.38 ($SD = 27.38$, range = 0.00 – 243.00) and the mean number of serious incidents was 0.56 ($SD = 1.18$, range = 0.00 – 8.00). The median, 75th percentile and 90th percentile were 3, 9.8 and 31.8 respectively for incidents and 0, 1 and 2 for serious incidents. There were 1823 incidents in total of which 64 were serious. Most incidents occurred within the State Hospital ($N = 1292$) and victims were usually staff ($N = 776$) or other patients ($N = 739$). Only 20 incidents occurred while patients were living in the community and just one of these was serious. Ten incidents involved stranger victims and one of these was serious.

Twenty (14.8%) patients committed an offense and 7 (5%) committed a violent offense. There were 51 offenses and 15 violent offenses in all. One individual was responsible for 12 offenses, four of which were violent. Forty-nine (96%) offenses were committed by patients living in the community. This is in contrast to the pattern for incidents described above.

Twenty-one (19.6%) of the 107 patients discharged from the State Hospital were readmitted before the end of 2001. Readmission was due to reoffending or violence in less secure inpatient settings.

Risk Assessment Scales

Interrater reliability. Nine patients were scored on the three scales independently by another researcher: four by one researcher, and 5 by another. The r_s were .834, $p = .079$ and .884, $p < 0.01$ for the H-10; .946, $p < .01$, and .703, $p = .052$ for the VRAG;

Table 2

Baseline Characteristics of the 140 Patients with Schizophrenia Detained at the State Hospital in 1992-1993 Included in the Risk Assessment Study

Baseline variable	Number (percentage) for categorical variables. Mean (range) for continuous variables
Socio-demographic variables	
Age – mean (range)	35.4 (19 – 63) years
Gender male	126 (90.0)
Marital status single	119 (85.0)
Socioeconomic group (based on father)	
I – III nonmanual	23(16.4)
III manual - V	72(51.4)
Unknown (no details on father available)	45(32.1)
Co morbid diagnoses (Feighner criteria)	
Any	91 (65.0)
Antisocial personality disorder	45 (32.1)
Alcohol dependence	36 (25.7)
Drug dependence	41 (29.3)
Mental handicap	6 (4.3)
Previous psychiatric treatment	
Any	136 (97.1)
Any admissions to psychiatric unit	128 (91.4)
Number of admissions to psychiatric units	5.66 (0-30) admissions
Cumulative time in psychiatric units	112 (0-439) months
Previous admission to State Hospital	34 (24.3)
Childhood (up to age 16 years)	
Significant event	100 (71.4)
Attended special school	37 (26.4)
Physically abused	20 (14.3)
Sexually abused	14 (10.0)
Substance misuse (any time prior to current admission)	
Alcohol abuse	81 (57.9)
Drug abuse	76 (54.3)
Intravenous drug abuse	15 (10.7)
Convictions (including index offenses and previous offenses)	
Any conviction	125 (89.3)
Homicide	37 (26.4)
Other nonsexual violence	74 (52.9)
Sexual offense	27 (19.3)

...continued

Table 2 (continued)

Baseline Characteristics of the 140 Patients with Schizophrenia Detained at the State Hospital in 1992-1993 Included in the Risk Assessment Study

Baseline variable	Number (percentage) for categorical variables. Mean (range) for continuous variables
Length of stay at State Hospital prior to 1 Jan 1994	6.1 (0.6 – 26.3) years
Admission to State Hospital from:	
Court	60 (42.9)
Prison	27 (19.2)
Other hospital	53 (37.9)
Legal status on admission	
Criminal court disposal (Part VI CPSA 1995))	80 (57.1)
Prison transfer (section 70 or 71 MHSA 1984)	26 (18.6)
Civil detention (section 18 MHSA1984)	34 (24.3)
Subject to special restrictions (section 59CPSA1995 or section 72 MHSA1984)	72 (51.4)
Circumstances of index event:	
Psychotic symptoms precipitant	96 (68.6)
Intoxicated with alcohol	24 (17.1)
Intoxicated with drugs	4 (2.9)
Life-time PSE nuclear syndrome according to case notes	113 (80.7)
Research interview in 1992-1993	
IQ	
Premorbid IQ (National Adult Reading Test)	97.7
IQ in 1992-1993 (Quick test)	90
Symptoms present (rated 3 or 4) on Krawiecka	
Depression	46 (34.8)
Anxiety	30 (22.7)
Coherent delusions	74 (56.1)
Hallucinations	40 (30.3)
Incoherence and irrelevance of speech,	20 (15.2)
Poverty of speech	5 (3.8)
Flattened or incongruous affect	20 (15.2)
Psychomotor retardation	14 (10.6)

and .827, $p = .084$, and .714, $p = .071$ for the PCL-R. This is consistent with previous research (Gray et al., 2004).

Parameters in sample. The means and distributions of scores on each of the three risk assessment scales are shown in Table 4. The three scales correlated highly: H-10 and VRAG ($r_s = .829$, $p < .001$), H-10 and PCL-R ($r_s = .839$, $p < .001$) and VRAG and PCL-R ($r_s = .728$, $p < .001$).

Relationship with outcome variables: Whether patient had outcome or not. Comparison between the mean scores on risk assessment scales between patients with and without the four incident/offense outcomes showed that scores on all three scales were significantly higher in patients with offenses or violent offenses but there were no such differences in patients with incidents or serious incidents (see Table 5).

ROC analysis revealed all scales to be little better than chance at predicting any incident or any serious incident (see Table 6), but to have moderate to high accuracy in predicting any offense (see Figure 1) or violent offense (see Figure 2). The scales were better at predicting violent offending than any offending, and the PCL-R showed the strongest predictive ability for serious offending.

Relationship with outcome variables: Frequency of outcome. The risk assessment scales correlated poorly with frequency of incidents and frequency of serious incidents. For incidents, the r_s were .123, .059 and .094 for the H-10, VRAG and PCL-R respectively; for serious incidents these were .068, .103 and .093. ROC analysis was conducted using the cut-offs of the median, 75th and 90th percentile for incidents, and the 75th and 90th percentiles for serious incidents. The median was not used for the serious incidents as it was 0. All three scales performed poorly (see Table 6), although they were better for identifying individuals with the highest frequency of incidents.

Relationship with progress from high-security care towards the community. The mean VRAG score was higher in patients who left high-security and the mean scores on all three risk scales were significantly higher in patients who reached the community than those who did not (see Table 5). In view of this and the finding that the vast majority of offenses were committed in the community, the ROC analyses for offenses and serious offenses were re-run excluding

patients who never reached the community. This did not result in any marked change in the AUC values (see Table 6). The prediction of offending was not therefore due to the scales predicting that individuals would reach the community and therefore be more likely to be at risk of offending.

Symptom Severity and Persistence

Interrater reliability. Eight patients were scored on the Krawiecka independently. The intraclass correlation coefficient (using a one-way random effects model) for the total score on the scale of .953 ($p < .001$) indicated a high degree of interrater reliability.

For 23 patients, a rating of whether there were definitely, probably, possibly, or no positive symptoms in a particular year was made from clinical records independently by two researchers. The weighted kappa of .79 indicated a good level of interrater reliability.

Parameters in sample. The mean total score on the Krawiecka was 7.04 ($SD = 5.12$, range = 0–19). The mean PYPS was .584 ($SD = .35$, range = 0–1). The two measures correlated significantly ($r_s = .537$, $p < .001$). Both measures correlated negatively with the three risk scales. For the Krawiecka, r_s (with significance) were $-.221$, $p < .05$; $-.141$, ns ; and $-.282$, $p < .01$ for the H-10, VRAG and PCL-R respectively; and for PYPS these were $-.198$, $p < .05$; $-.301$, $p < .01$; $-.181$, $p < .05$ respectively.

Relationship with outcome variables: Whether patient had outcome or not. The mean PYPS was significantly higher in patients involved in an incident compared to those who were not. The Krawiecka total in patients who committed a violent offense was significantly lower than in those who did not, and the mean PYPS was lower in patients without an offense compared to those with an offense (see Table 5).

ROC analysis revealed the total Krawiecka score to poorly predict all outcomes except any violent offense (see Table 6). For this the Krawiecka total was predictive of not committing a violent offense. PYPS was a poor predictor of all outcomes, but was a better predictor of whether a person committed any incident than the Krawiecka total or the three risk assessment scales.

Table 3

Progress of the 140 Patients from High-security Care towards the Community

Setting	Number (%) of patients who spent some time in that setting	Mean (range) number of weeks in that setting for patients who spent any time there
High security hospital	140 (100)	275.4 (23.0 - 520.0)
Other secure hospital	94 (67.1)	86.0 (1.0 - 386.0)
Open hospital	68 (48.6)	157.5 (0.2 - 459.0)
Community	54 (38.6)	181.3 (9.0 - 404.0)
Prison	10 (7.1)	62.9 (2.0 - 276.0)

Table 4

Means and Distribution of Scores of the Three Risk Assessment Scales for the 140 Patients

Risk assessment scale	Descriptive statistics	
H-10	Mean (<i>SD</i>)	13.38 (3.43)
	Distribution within each score range – number (%)	
	0-10	36 (25.5)
	11-15	57 (40.4)
	16-20	47 (33.6)
VRAG	Mean (<i>SD</i>)	2.23 (10.60)
	Distribution within each score range – number (%)	
	≤-22	0
	-21 to -15	4 (2.8)
	-14 to -8	28 (19.9)
	-7 to -1	26 (18.4)
	0 to 6	30 (21.3)
	7 to 13	26 (18.6)
	14 to 20	22 (15.6)
	21 to 27	4 (2.8)
	≥28	0
	Distribution within each score range – number (%)	
	Mean (<i>SD</i>)	14.29 (7.13)
	Distribution within each score range – number (%)	
	0-9	39 (27.9)
	10-14	27 (19.3)
	15-24	65 (46.4)
	≥25	9 (6.4)

Table 5

Comparison of Mean Scores of Predictor Variables According to Whether Patients Did or Did Not Have a Risk Outcome, and According to Whether Patients Left High-security Care, Reached the Community or Having Left High-security Were Readmitted

	Any incident				Any serious incident			
	Mean scores		Mann-Whitney U test		Mean scores		Mann-Whitney U test	
	yes (N = 107)	no (N = 33)	U	p	yes (N = 39)	no (N = 101)	U	p
H-10	13.54	12.85	1562.5	.317	13.62	13.29	1864	.623
VRAG	2.44	1.55	1680	.674	3.79	1.62	1777	.371
PCL-R	14.44	13.83	1681.5	.680	15.19	13.95	1798	.425
Krawiecka	7.38	6.17	1311.5	.315	7.72	6.75	1611	.311
PYPS	.619	.470	1323	.027	.621	.570	1814	.462

	Any conviction				Any violent conviction			
	Mean scores		Mann-Whitney U test		Mean scores		Mann-Whitney U test	
	yes (N = 20)	no (N = 115)	U	p	yes (N = 7)	no (N = 128)	U	p
H-10	15.94	12.89	453	.000	16.43	13.00	163	.009
VRAG	10.39	.45	452	.000	12.14	.88	158.5	.008
PCL-R	19.41	13.57	512	.002	22.39	13.72	137.5	.004
Krawiecka	4.938	7.182	595.5	.111	1.50	7.27	107.5	.006
PYPS	.477	.633	712	.099	.378	.628	240.5	.081

	Left high security hospital				Reached community (if left high security hospital)			
	Mean scores		Mann-Whitney U test		Mean scores		Mann-Whitney U test	
	yes (N = 107)	no (N = 33)	U	p	yes (N = 107)	no (N = 33)	U	p
H-10	13.47	13.09	1638	.530	14.19	12.74	1077.5	.027
VRAG	3.22	-1.00	1348	.040	5.56	.85	1051	.018
PCL-R	14.21	14.57	1705	.766	15.86	12.53	1069	.024
Krawiecka	6.56	8.53	1235.5	.052	5.96	7.16	1076.5	.229
PYPS	.51	.81	935	.000	.40	.63	870	.000

Readmitted to high security hospital following discharge				
Mean scores		Mann-Whitney U test		
yes (N = 21)	no (N = 86)	U	p	
H-10	14.62	13.19	685	.086
VRAG	8.29	1.99	579	.011
PCL-R	16.59	13.63	689	.093
Krawiecka	5.95	6.71	718.5	.480
PYPS	.545	.505	816.5	.494

Table 6
ROC Analysis for Prediction by the Five Measures of Outcomes

Definition of outcome group		Number of patients in outcome group/ number of patients at risk of outcome	ROC curves: AUC values				
			Krawiecka	PYPS	H-scale	VRAG	PCL-R
Any incident		107/140	.561	.625*	.557	.524	.524
Any serious incident		39/140	.556	.539	.527	.549	.544
Any offense		20/135	.376	.380	.758**	.759**	.726**
Any violent offense		7/135	.167**	.307	.792*	.798**	.825**
Any offense in patients who reached the community		17/54	.419	.556	.796**	.755**	.780**
Any violent offense in patients who reached the community		7/54	.224*	.446	.772*	.770*	.841**
Frequency of incidents above:	Median	69/140	.620*	.629**	.604	.557	.597
	75th percentile	35/140	.641*	.709**	.551	.545	.564
	90th percentile	14/140	.697*	.686*	.510	.507	.520
Frequency of serious incidents above:	75th percentile	35/140	.584	.537	.538	.547	.536
	90th percentile	13/140	.515	.532	.617	.612	.616
Readmitted to high security hospital having been discharged		21/107	.449	.548	.621	.679	.618
Any incident not unders influence of psychosis		38/140	.395	.273**	.631	.626	.621
Any serious incident not under influence of psychosis		6/140	.275*	.231*	.604	.651	.678

* Significant at 0.05 level. ** Significant at 0.01 level.

Figure 1

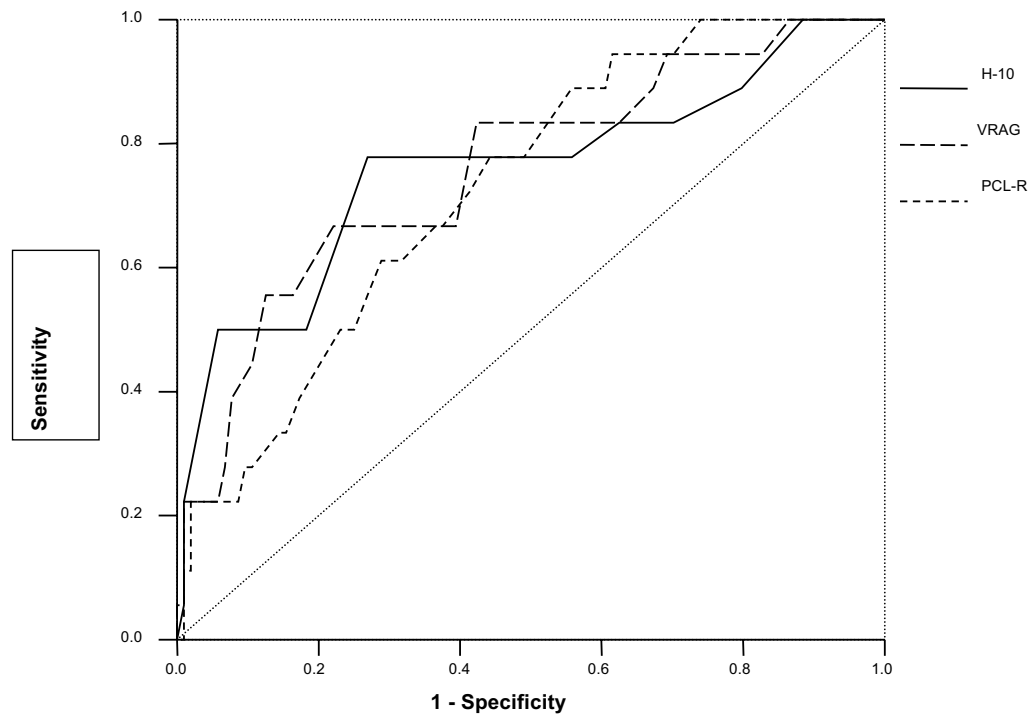
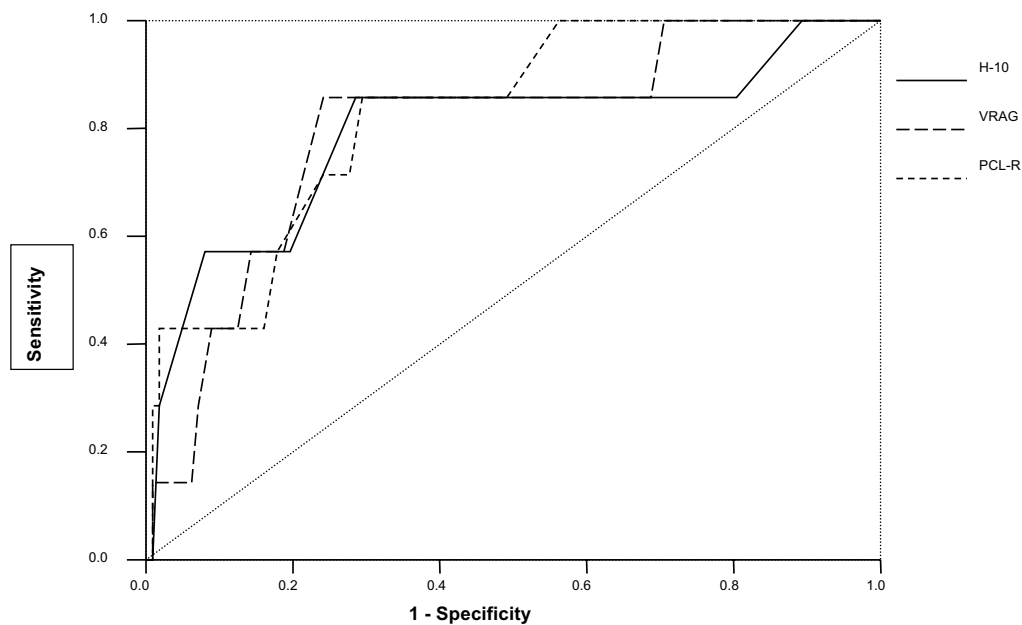
ROC Curves for the Prediction of Any Offense by the Three Risk Assessment Scales

Figure 2

ROC Curves for the Prediction of Any Violent Offense by the Three Risk Assessment Scales

Relationship with outcome variables: Frequency of outcome. Severity of symptoms at baseline and persistence of symptoms correlated significantly with frequency of incidents ($r_s = .269, p = .002$ for Krawiecka, total; and $.329, p < .001$ for PYPS), but not frequency of serious incidents ($r_s = .093$ for Krawiecka total, and $.064$ for PYPS). ROC analysis showed the Krawiecka total and PYPS to approach moderate predictive accuracy for higher frequency of incidents, but not higher frequency of serious incidents (see Table 6).

Relationship with progress from high security care towards the community. The mean Krawiecka total and mean PYPS were higher in patients who did not leave high security compared to those that did, and were higher in those who did not reach the community compared to those who did (see Table 5). This is irrelevant to the findings regarding the relationship between these two variables and incidents as most incidents occurred in secure settings. However a negative relationship was found between the mean Krawiecka total and offending. It persisted when this was reanalyzed in only patients who reached the community (see Table 6).

Risk Assessment Scales and Prediction of "Nonpsychotic" Incidents

The results indicated that the risk assessment scales were poor at predicting whether an individual would commit an incident or violent incident, and that severity and persistence of symptoms were better predictors of incidents. Data were available on whether patients were suffering from positive psychotic symptoms at the time of an incident. ROC analysis was therefore repeated to look at the predictive accuracy of the three risk scales for incidents and serious incidents, which were not related to psychosis (see Table 6). The accuracy of the three scales improved and approached moderate predictive accuracy.

DISCUSSION

The assessment and management of risk of violence to others is an integral part of the practice of psychiatry. Given that such assessments may result in an individual's loss of liberty or in a threat to public

safety, it is essential that the methods of such assessments are examined and ways to improve risk assessment sought. It has been argued that actuarial methods of risk assessment are the most accurate and should be used routinely in the prediction of further violence, but these do not include measures of symptoms. Indeed the VRAG weighs schizophrenia negatively as a factor with a reduced risk of violence although many studies have demonstrated that schizophrenia is associated with an increased likelihood of violence to others (Walsh, 2001). Evidence exists however, both for (McNeil, Eisner, & Binder, 2000) and against (Bonta et al., 1998) psychotic symptoms contributing to an elevated risk of violence. It was therefore important to include measures of initial and ongoing symptoms within the study.

Main Findings

Incidents within the study cohort were common and highlight the need for careful management of this population to improve the safety of fellow patients and staff. This suggests that these patients were correctly placed in a secure setting, a result supported by an earlier study that found that patients accepted for admission to special security had greater severity of index offense or behavioral disturbance leading to referral, and more psychotic symptoms (Pimm, Stewart, Lawrie, & Thomson, 2004). Reconviction was much less common: 15% of patients were convicted of an offense during the follow up period and 5% of a violent offense. As would be expected, the patterns for incidents and offenses were inverted: Incidents occurred mainly in psychiatric hospitals whereas offenses took place in the community. Rightly or wrongly, the police are seldom called to investigate incidents of violence within a hospital. Many of these would have resulted in charges had they occurred in the community.

All three risk assessment scales were able to predict recidivism and violent recidivism, but not incidents or serious incidents. These instruments are therefore valid to use in assessing risk of recidivism, particularly violent recidivism, in this population although the issue of false positives remains. Our predictive accuracy for recidivism was better than found in a sample of 315 mentally disordered offenders discharged from a medium secure unit in

the UK (Gray et al., 2004). This was particularly marked for the PCL-R, which is in keeping with previous studies (Hemphill, Hare, & Wong, 1998). These risk assessment scales do not however, assist in the prediction of “day to day” incidents or serious incidents within a psychiatric hospital although the results approached moderate accuracy in the prediction of the most frequently occurring incidents.

Severity of the initial or persistent symptoms of psychosis rated either at the time of assessment of the initial cohort or as a proportion of years with positive symptoms were better predictors of incidents. There was a significant correlation between the two such that patients with higher ratings of psychosis at the initial interview were more likely to continue to display these during the follow-up years. It was however, the persistence of positive symptoms that most accurately predicted incidents. Severity of symptoms at the time of the initial assessment was predictive of not committing a violent offense and this is probably related to ongoing detention in hospital and lack of opportunity; however, the ROC analysis was repeated excluding those who never reached the community and the AUC values did not change greatly. It is possible that the historical variables are more successful in predicting violence related to stable personality factors. This suggestion is supported by the significantly higher average score on VRAG (with significantly fewer ongoing symptoms of psychosis) found in the group who left special security; in the higher VRAG, H-10 and PCL-R scores found in the group who reached the community; and in the results of a Scottish Prison Service Study (Cooke, Michie, & Ryan, 2001), in which the VRAG and H scale were found to have good predictive validity for both violent reconviction and institutional misconduct. The sample involved in this study was similar in demographic characteristics to the sample in the current study, but with very low incidence of major mental disorder. Our results suggest that the presence of psychotic symptoms may reduce the predictive power of these instruments for institutional violence. This was explored using the data collected on the presence or absence of positive symptoms at the time of each incident. In an attempt to see if removal of positive symptoms of psychosis improved the accuracy of the risk assessment measures, the ROC analysis was repeated only using those cases where

there was thought to be no association. The accuracy of the three scales improved but only approached moderate predictive accuracy. This may be related to the timescale for a risk assessment and the long follow-up period in this study. Gray et al. (2003) were able to predict over a three-month period using the H-10 verbal aggression (AUC = .73), violence to property (AUC = .82), and physical aggression (AUC = .77) in a prospective study of patients admitted to a medium secure setting. Similarly, Doyle et al. (2002) were able to predict inpatient violence with moderate accuracy during a 12-week period following admission using the PCL-Screening Version (PCL-SV), the VRAG, and the H-10. Difficulties in predicting inpatient violence over longer time periods using the H-10 (AUC = .57) and PCL-SV (AUC = .61) have been found in other studies (Dolan & Doyle, 2000).

Limitations

The retrospective nature of the study necessitated the use of only historical factors employed in risk assessment that, while showing good predictive validity for recidivism and violent recidivism, may not provide a complete picture of the likelihood of future violence. In particular the Clinical and Risk Management scales of the HCR-20 in prospective studies have been shown to predict post-release community violence among forensic psychiatric patients (Douglas, Ogloff, & Hart, 2003), and institutional violence and recidivism among nonmentally disordered offenders in a maximum-security setting (Belfrage et al., 2000), while the Clinical (as well as the Historical) scale was found to predict institutional violence among patients in a medium security unit in the UK (Gray et al., 2003).

A retrospective study is dependent on recorded information. Data were available on 83% of the initial cohort for complete risk assessment and importantly, no significant differences were detected between excluded and included patients.

The study specifically excluded episodes of verbal aggression as an outcome measure. While verbal aggression is important, it is recognized that it is poorly and inconsistently recorded depending on the normal verbal expression of a patient, the frequency with which it occurs, and the significance attached to it by a staff member. This is much less

likely to be the case for incidents involving physical contact, sexually inappropriate behavior or physical damage to property. It is highly unlikely that any serious incidents resulting in injury, sexual contact or fire setting will not be recorded.

The research cohort was drawn from a prevalence study and the setting of that study may well have affected the results. Many patients remained either in high- or low-security settings for the majority of the follow-up period with only 53 (37.9%) ever reaching the community. Within these settings, patients are carefully managed to avoid incidents or to prevent minor violent incidents from escalating into more serious incidents, although incidents were common. It is possible, however, that some patients may be at risk of more serious acts of violence to others in the future but are prevented from being involved in serious incidents by their current setting. This in itself may have reduced the predictive power of the risk assessment scales, as there is no way of identifying which patients may have been involved in serious incidents had they been out in the community. Further research is needed to identify the processes involved in the daily management of patients, particularly in the avoidance of serious incidents.

Implications

Violent incidents in a forensic psychiatric cohort with schizophrenia are common occurrences and require active clinical management. Actuarial measures of risk of violence to others, namely the VRAG and the historical items of the HCR-20, as well as the PCL-R, are useful in the prediction of recidivism and violent recidivism, and approach moderate accuracy in the prediction of high frequency incidents in this population but do not predict daily violent incidents. Persistence of symptoms is a better predictor of incidents of aggression and appears to be the major factor in determining length of stay in a secure setting rather than score on actuarial risk assessment measures. Indeed, greater lifetime positive symptoms of psychosis was found to be a predictive variable in determining those patients likely to require secure psychiatric care (Miller, Johnstone, Lang, & Thomson, 2000). Recidivism is more closely related to criminogenic factors rather than symptoms of illness. Reoffending, in particular violent reoffending, in this population was not common and this suggests that the management of these mentally

Box 1

CLINICAL IMPLICATIONS

- Violent incidents in patients with schizophrenia in a secure setting are common and further research into assessment and management techniques is required to reduce this frequency.
- Actuarial measures of risk assessment are useful in the prediction of recidivism and violent recidivism.
- The severity and persistence of symptoms of psychosis are better predictors of institutional violence than actuarial measures.

LIMITATIONS

- The retrospective nature of the study allowed for a long follow up period but limited risk assessment to actuarial measures alone.
- The assessment of risk was dependent on the quality of information contained in the case notes and complete risk assessment data were available in 83% of cases.
- Ongoing detention in a secure setting may reduce the number of serious incidents via nursing intervention and thereby reduce the predictive power of the risk assessment scales.

disordered offenders is positive from a public safety perspective. The assessment and management of daily incidents of violence in secure settings however, requires further intervention. There is a growing body of literature on the structured assessment of inpatient aggression (Daffern, Howells, & Ogloff, 2007) and we are currently using the Dynamic Appraisal of Situational Aggression (DASA; Ogloff & Daffern, 2006) and the Staff Observation Scale - Revised (SOAS-R; Nijman et al., 1999), to assess aggressive behavior prospectively, and to examine methods of prediction of violence in an inpatient setting amongst a chronically psychotic population.

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The Predictive Validity of the PCL:SV Among a Swiss Prison Population

Jérôme Endrass, Astrid Rossegger, Andreas Frischknecht, Thomas Noll, and Frank Urbaniok

Recent studies have found mixed results for the ability of the PCL:SV to predict in-prison violence. The purpose of this study was to evaluate the accuracy of the PCL:SV for predicting in-prison violence in Switzerland. Method: PCL:SV scores were assessed from a sample of 114 prisoners sentenced to at least 10 months in prison for sexual or violent offenses. Results: Significant effect sizes for verbal aggressive behavior were found for sexual offenders. No significant results were found in a sample of violent offenders. No significant results were found for physical violence in any subgroup. Discussion: The results suggest only a limited degree of accuracy for the PCL:SV in predicting intramural aggressive behavior for the sample used in this study.

The Psychopathy Checklist (PCL-R; Hare, 1991) is based on traditional concepts of psychopathy as described by Cleckley in 1941 (Cleckley, 1976) and was developed to assess psychopathy among offenders. Subjects fulfilling the criteria for psychopathy display specific deficits in interpersonal relations, affective attributes and behavioral features (Berrios, 1996; Cleckley, 1976; Hare, 1991; Millon, Simonsen, Birket-Smith, & Davis, 1998; Pichot, 1978). The PCL-R (Hare, 1991) is considered the gold standard for the diagnosis of psychopathy and its good psychometric properties have been replicated in various studies (Douglas, Strand, Belfrage, Fransson, & Levander, 2005).

Though the PCL-R was not originally developed as a risk assessment tool, its usefulness for predicting the risk of criminal recidivism soon became evident: Psychopathy was a risk factor for recidivism. The PCL-R became the “unparalleled” measure of offender risk (Salekin, Rogers, & Sewell, 1996), and a “state-of-the-art instrument” (Fulero, 1995; Shine & Hobson, 1997) to many mental health professionals. Psychopathy, as defined by the PCL-R, is considered to be one of the most important predictors of future violent offending. Studies, primarily conducted with Canadian correctional populations, have repeatedly shown the utility of the PCL-R in

identifying the risk for violent offenses upon release (Hare, Clark, Grann, & Thornton, 2000).

A difficulty of the PCL-R is that it requires detailed information of the case history. The need for such detail makes administering the PCL-R a time-consuming task. Only with sufficient training and experience are raters able to complete the scoring in 2-3 hours. These considerations led to the development of the Screening Version of the PCL-R. The PCL:SV is derived directly from the PCL-R for use in forensic and civil settings (Hart, Cox, & Hare, 1995) and consists of 12 items that require less detailed information to score than those in the PCL-R. Scores range from 0 to 24, reflecting the degree of psychopathic characteristics of an individual (Forth, Hart, & Hare, 1990). Each item is coded on a 3-point scale, from 0 (*clearly absent*) to 2 (*clearly present*). Although there is no official universally valid cut-off point, Hart recommends a score of 18 for the diagnosis of psychopathy (Hart, Cox, & Hare, 1995).

Even though the PCL:SV is less complex than the PCL-R, there is strong support in the scientific community that its predictive validity seems to be comparable to the PCL-R. In a civil psychiatric population, the PCL:SV was the best single predictor of violence (Steadman et al., 2000). Forensic

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psychiatric patients with scores higher than 12 were significantly associated with violent behavior in the community after release (Monahan et al., 2001). Hill et al. (1996) studied the predictive validity of the PCL:SV with respect to self-harm, aggression, escape attempts, and treatment refusal in a sample of 55 offenders admitted to a maximum-security forensic psychiatric institution in Texas. The authors found that the PCL:SV was predictive of both aggression and treatment noncompliance. Similar findings were reported by Belfrage, Fransson, and Strand (2000). Validation studies in Europe are rare. In Switzerland, a research group consisting of forensic psychiatrists and psychologists (Urbaniok, Endrass, Rossegger, & Noll, 2007) examined the predictive validity of the PCL:SV scores for 96 violent and sexual offenders. The scores (based on data taken from forensic psychiatric expert opinions) were then compared to subsequent recidivism as shown in official penal records. The PCL:SV total score yielded a satisfactory predictive accuracy (ROC area = .70) for prediction of recidivism.

In recent years indications have emerged that the use of the PCL-R and the PCL:SV might be further extended to predict violence during institutionalization. Research conducted on forensic psychiatric patients found moderate correlations between violence in institutions and psychopathy (Gacono, Meloy, Sheppard, & Speth, 1995; Heilbrun et al., 1998; Hildebrand, De Ruiter, & Nijman, 2004; Hill, Rogers, & Bickford, 1996).

Belfrage et al. (2000) established an empirical association between high scores in the PCL:SV and institutional aggression in correctional inmates. The authors carried out a prospective study among 41 long-term sentenced offenders in two correctional maximum-security institutions, and found that subjects who behaved violently had significantly higher PCL:SV scores and were more often diagnosed as psychopaths. Doyle, Dolan and McGovern (2002) investigated the association between PCL:SV and institutional misconduct in 87 mentally ill offenders of a medium-security prison in the UK. Patients with violent incidents showed higher scores in the PCL:SV. Furthermore, the authors found that 75% of the participants with a score ≥ 18 behaved violently.

The majority of research on predictive validity of the PCL:SV for institutional misconduct has been

conducted with North American samples (Douglas et al., 2005) and includes only relatively small samples (Belfrage, et al., 2000; Strand, Belfrage, Fransson, & Levander, 1999). An exception to this is the study by Douglas et al. (2005) who examined 560 male and female Swedish forensic patients and criminal offenders. There was a modest relationship between the PCL:SV total score and various forms of aggression (physical harm, serious threats, severe damaging of property) ($r = .23$, AUC = .65). Notably, the correlation between aggression and PCL:SV scores were higher for females than males, even though the difference diminished when personality disorders were taken into account.

However, recent publications have put these early findings into question.

In a meta-analysis, Walters (2003) concluded, based on his results, that the overall relation between PCL scores and institutional adjustment might be weaker than between PCL scores and recidivism risk.

A meta-analysis conducted by Guy, Edens, Anthony, and Douglas (2005), including the results of 38 studies, showed significant but small effect sizes ($r = .17$ for physical violence, $r = .26$ for verbal aggressive behaviour and $r = .23$ for general aggression) between institutional misconduct and PCL scores. The authors have noted that the effect sizes may vary significantly across different countries.

The aim of the present study was to conduct a first-time evaluation of the predictive validity of the PCL:SV for violent infractions among a population in Switzerland of incarcerated violent offenders and sex offenders. PCL-R scores were available for the sample that was subject in a paper by Urbaniok et al. (2007). As PCL-R scores can reliably be transformed into PCL:SV scores (Cooke, Michie, Hart, & Hare, 1999) we used the existing PCL-R data of the said sample to gather PCL:SV scores instead of reassessing data anew. Although we could have used the PCL-R data without prior transformation into PCL:SV values, our prime interest was how PCL:SV would perform vis-à-vis prison misconduct. Using the PCL:SV instead of the PCL-R as a standard first-time forensic-psychological assessment would have obvious advantages in regards to time and economical aspects, as the screening version can generally be completed in less time than the full form.

METHOD

In this study the association between different types of prison misconduct (especially violent infractions) was examined. The sample consisted of 114 violent and sexual offenders of a Swiss state penitentiary. We hypothesized that high PCL:SV scores would be associated with (1) verbal aggression, and (2) violent infractions.

Sample

The inclusion criteria for the study were: 1) male offenders who were administrated by the Zurich correction and probation service in August 2000, who were 2) convicted for a violent or sex offense in the State (canton) of Zurich (an urban and pre-alpine area with a population of approximately 1,200,000), who were 3) sentenced to at least ten months, and who have 4) been incarcerated in the Zurich state penitentiary "Pöschwies" (the largest prison in Switzerland).

Five hundred and forty three persons matched inclusion criteria 1 - 3. Of those, 178 had been incarcerated in the "Pöschwies" (inclusion criterion 4). A further requirement was the availability of a psychiatric expert opinion as experience has shown that the PCL usually cannot be completed without the information contained in the expert opinion. One hundred and twenty three sexual and violent offenders fulfilled all of the inclusion criteria. The exclusion of all participants with more than four missing items in the PCL-R reduced the sample to 114 participants.

Procedure and Measures

To assess psychopathy, no direct contact is necessary if enough collateral information can be gathered from files and psychiatric expert opinions (Hart et al., 1995). The rules for judgment are provided in the PCL-R manual.

All scores were retrospectively assessed from file data. At no time was there any direct contact with the offenders. The files of the offenders and expert opinions were used to examine the PCL-R and a series of psychiatric, psychological, criminological, socioeconomic variables. The files contained extensive historical details on the subject, including

criminal history, exact type and circumstances of violent offense, as well as a personality and psychiatric diagnosis (if any) of the individual.

Inmate behavior (institutional infractions) was assessed using the files of the state penitentiary. Violent infractions were defined as physical behavior that harmed or had the potential to harm others (staff members or other prisoners). Damage to property was not considered as physical aggression. Further categories were: verbal aggression (e.g. threats), illegal drug abuse, the possession of illegal drugs, and the total number of disciplinary infractions.

Interrater Reliability

For interrater reliability various studies found that intraclass coefficients of the various forms of the PCL ranged from .74 to .97 (Hare, 1991; Hare et al., 2000; Smith & Newman, 1990). To prevent bias in the scoring of the PCL-R, two separate teams coded all predictor variables before evaluating disciplinary infractions. The interrater reliability was assessed with Krippendorff's α (Krippendorff, 1987), a very conservative measure for interrater reliability. The advantage of this measure is that it can be used to analyze the agreement of multiple raters, even if there are unequal sample sizes or missing data. Furthermore it takes the variable's level of measurement into account. For the PCL-R, Krippendorff's α was .89, which Krippendorff considers highly satisfactory.

As Krippendorff's α is not widely used in the psychological scientific community, intraclass correlation coefficients (ICC) for the total score and Cohen's κ for individual items shall be reported as well:

For the PCL-R total score, $ICC_{(3,1)}$ was .93, ($CI_{95\%} = .83 - .98, p < .001$). For the PCL-R factor 1 score, $ICC_{(3,1)}$ was .91 ($CI_{95\%} = 0.76 - 0.97, p < .001$) and for the factor 2 score, $ICC_{(3,1)} = .93$ ($CI_{95\%} = .82 - .98, p < .001$).

The mean of Cohen's κ values for individual items ranged from .25 to .85. Table 1 shows κ values for individual items in greater detail.

The scores of the 20 PCL-R items were converted to PCL:SV items applying algorithms based on Table 2 ("Items in the Hare Psychopathy Checklist-Revised [PCL-R]: Both Screening Version [PCL:SV] and the corresponding PCL-R items") in Cooke et al. (1999). We worked directly with the

English version of the PCL:SV without prior translation into German.

Statistical Analysis

A negative binomial regression model was used to estimate violent infractions as a function of the PCL:SV. The natural log of the number of days spent in prison was included as a covariate in the model, with the coefficient constrained to 1, to equate participants for time at risk. All models were estimated using STATA SE 9.2.

RESULTS

Sociodemographic and Offense-related Variables

All participants were male; 58.8% ($n = 67$) were Swiss and 12.3% ($n = 14$) originated from a European Union (EU) country. At the time of the offense, 14.9% ($n = 17$) were married and 36% ($n = 41$) had

a child; 30.7% ($n = 35$) had lived in a foster home before the age of fifteen; 9.7% ($n = 11$) had been sexually abused during their childhood; 81.6% ($n = 93$) had a criminal record before the index offense; and 30.7% had previously been treated in an inpatient psychiatric facility.

The mean biological age at the beginning of the sentence was 36.3 years ($SD = 8.9$, range = 20 - 60). Two-thirds of the index offenses were violent acts: In nearly half of the sample (47.4%, $n = 54$) the index offense was murder, attempted murder, manslaughter or attempted manslaughter; 6 (5.3%) were convicted for physical assault, 11 (9.7%) for armed robberies, and 6 (5.3%) for arson; 12 (10.5%) were convicted for child abuse, 17 (14.9%) for rape and 5 (4.4%) for coercion. Three participants (2.7%) matched none of these categories. The mean time spent in the institution was 1692 days ($SD = 1067.22$, range = 20 - 5166).

With regard to disciplinary infractions, 84.2% ($N = 96$) participants had at least one disciplinary infraction during incarceration. The average number of incidents per prisoner was 5.2 ($SD = 5.92$, range

Table 1
Cohen's κ Values for Individual PCL-R Items

PCL-R Item #	Range	Mean	SD	Median
Item 1	0.65 - 0.87	0.76	0.11	0.76
Item 2	0.14 - 1.00	0.43	0.49	0.14
Item 3	0.09 - 0.74	0.32	0.36	0.15
Item 4	0.67 - 1.00	0.78	0.19	0.67
Item 5	0.15 - 0.64	0.41	0.25	0.44
Item 6	0.75 - 0.88	0.79	0.07	0.75
Item 7	0.13 - 0.78	0.35	0.37	0.15
Item 8	0.78 - 0.93	0.86	0.08	0.86
Item 9	0.56 - 1.00	0.7	0.26	0.56
Item 10	0.44 - 0.86	0.67	0.21	0.72
Item 11	0.52 - 0.74	0.6	0.12	0.55
Item 12	0.77 - 0.87	0.84	0.06	0.87
Item 13	0.67 - 0.78	0.71	0.06	0.69
Item 14	0.43 - 0.79	0.55	0.21	0.43
Item 15	0.67 - 0.77	0.70	0.06	0.67
Item 16	0.19 - 0.58	0.37	0.19	0.35
Item 17	0.26 - 1.00	0.51	0.43	0.26
Item 18	0.74 - 0.94	0.83	0.11	0.80
Item 19	0.36 - 0.76	0.56	0.20	0.55
Item 20	0.21 - 0.67	0.39	0.25	0.29

= 0 - 26). With regard to type of disciplinary infractions, 14% ($N = 16$) have been reported for cannabis use or possession, and 13.2% ($N = 15$) for use or possession of other illegal drugs. In 26.3% ($N = 30$), a verbal aggressive infraction was listed in the files ($M = .55$, $SD = 1.43$, range = 0 - 12). One third of the participants (28.1%, $N = 32$) behaved violently ($M = .52$, $SD = 1.10$, range = 0 - 8). Using a broader definition of violence (combining the categories verbal aggression and violent infractions), 38.6% of the offenders ($N = 44$) could be considered as having displayed violent behavior.

Differences Between Violent and Nonviolent Offenders

Stratified analysis with bivariate logistic regression was conducted to control differences between violent and nonviolent inmates. There were no differences with respect to marital status ($p = .84$), criminal record ($p = .23$), index offense ($p = .65$), age at the beginning of incarceration ($p = .46$), time

spent in the institution ($p = .07$), or vocational education ($p = .075$).

PCL:SV-Scores in Relation to Specific Types of Violent Infractions

The mean score in the PCL:SV was 10 points, with scores ranging between 0 and 21 ($SD = 4.91$). With a cut-off score of 18 points, 9 participants (7.9%) would be diagnosed as psychopathic.

Factor 1 scores ranged from 0 to 11 points ($M = 4.38$, $SD = 2.66$), and factor 2 scores also ranged from 0 to 11 points ($M = 5.31$, $SD = 3.00$).

The total score of the PCL:SV was predictive for neither physical violence nor violence in general (physical and/or verbal). However, the total score predicted the occurrence of verbal aggression (IRR = 1.13, $CI_{95\%} = 1.025 - 1.246$, $p < .05$). Furthermore, there was no relationship between Psychopathy (using the cut-off score of 18 suggested by Hart et al., 1995) and any form of violence during institutionalization (see Table 2).

Table 2

Summary of Negative Binomial Models for PCL:SV Predictions of Different Types of Intramural Infractions

	PCL:SV	IRR	SE	95% CI (IRR)	alpha	95% CI (alpha)
VI	Score	1.039	.355	.958 - 1.126	2.198	1.065 - 4.537
VA	All offenders	1.130*	.056	1.025 - 1.246	3.398	1.802 - 6.408
GV		1.064	.425	0.994 - 1.161	2.691	1.634 - 4.431
VI	PCL:SV	.589	.546	.096 - 3.621	3.531	.266 - 46.825
VA	Score ≥ 18	.800	.568	.199 - 3.220	2.626	.357 - 19.344
GV		.667	.524	.143 - 3.110	4.078	.797 - 20.852
VI	Score	1.062	.067	.938 - 1.203	1.854	.469 - 7.326
VA	Sexual offenders	1.154*	.081	1.004 - 1.325	2.495	.985 - 6.320
GV		1.075	.077	.934 - 1.236	3.478	1.522 - 7.945
VI	Score	1.014	.055	.911 - 1.128	2.193	.890 - 5.402
VA	Violent offenders	1.037	.065	.917 - 1.174	2.493	.818 - 7.599
GV		1.022	.049	.930 - 1.123	1.879	.931 - 3.789

VI = Violent infractions: physically aggressive major disciplinary infraction.

VA = Verbal aggression, threats.

GV = General violent infractions (verbally or physically aggressive).

alpha = Correction parameter for overdispersion

SE = Standard error.

CI = Confidence interval.

IRR = Incidence-rate ratios

* $p < .05$

Stratifying by index offenses (violent or sexual offense), the data showed predictive validity of the PCL:SV score for sexual offenders, but not for violent ones. Pertaining to the sexual offenders, the incident rate ratio for verbal aggression increased with each point of the PCL:SV by 15% (IRR = 1.15, $CI_{95\%} = 1.025 - 1.246$, $p < .05$).

The factor 1 score was not predictive for any form of misconduct. Also stratifying by index offense did not reveal any significant correlation (see Table 3).

The factor 2 score however turned out to predict verbal aggressive behavior for both the whole sample (IRR = 1.20, $CI_{95\%} = 1.032 - 1.397$, $p < .05$) as well

as for sexual offenders (IRR = 1.255, $CI_{95\%} = 1.027 - 1.535$, $p < .05$). In fact, it turned out that the factor 2 score alone seemed to possess better predictive validity than the PCL:SV total score for the sample under study. No significant correlation could be found for violent offenders (see Table 4).

Noteworthy is the fact that the alpha-value (a scale parameter introduced into a negative binomial model to account for the overdispersion found in most real-life data situations) was relatively high for all models, indicating that other unobserved factors were missing in the models, which could explain more of the variation found in the dependent variable than the PCL:SV scores.

Table 3

Summary of Negative Binomial Models for PCL:SV Factor 1 Scores and Different Types of Intramural Infraction

	PCL:SV Factor 1	IRR	SE	95% CI (IRR)	alpha	95% CI (alpha)
VI	Score	1.054	.085	.899 - 1.234	2.269	1.112 - 4.631
VA	All offenders	1.218	.128	.991 - 1.497	3.825	2.073 - 7.056
GV		1.122	.091	.958 - 1.316	2.841	1.749 - 4.614
VI	Score	1.124	.166	.841 - 1.503	1.944	.508 - 7.430
VA	Sexual offenders	1.210	.207	.866 - 1.691	3.256	1.392 - 7.614
GV		1.094	.177	.797 - 1.502	3.803	1.762 - 8.210
VI	Score	1.001	.099	.823 - 1.216	2.197	.890 - 5.422
VA	Violent offenders	1.091	.124	.874 - 1.363	2.449	.799 - 7.511
GV		1.037	.091	.873 - 1.231	1.890	.939 - 3.805

Table 4

Summary of Negative Binomial Models for PCL:SV Factor 2 Scores and Different Types of Intramural Infraction

	PCL:SV Factor 2	IRR	SE	95% CI (IRR)	alpha	95% CI (alpha)
VI	Score	1.070	.073	.936 - 1.223	2.172	1.046 - 4.506
VA	All offenders	1.200*	.093	1.032 - 1.397	3.385	1.784 - 6.421
GV		1.118	.071	.987 - 1.266	2.680	1.622 - 4.430
VI	Score	1.098	.110	.902 - 1.337	1.924	.503 - 7.353
VA	Sexual offenders	1.255*	.129	1.027 - 1.535	2.257	.852 - 5.979
GV		1.132	.123	.914 - 1.400	3.375	1.455 - 7.829
VI	Score	1.039	.096	.867 - 1.247	2.165	.875 - 5.357
VA	Violent offenders	1.029	.110	.834 - 1.269	2.564	.853 - 7.710
GV		1.032	.084	.881 - 1.210	1.878	.930 - 3.791

DISCUSSION

In this study, the validity of the PCL:SV for predicting intramural violent behavior of sexual and violent offenders was evaluated for the first time in a German-speaking country. Although the PCL:SV was primarily designed to be a screening tool for the diagnosis of psychopathy and not as a risk assessment instrument, some studies have found that it has substantial predictive properties for institutional violence (Belfrage et al., 2000; Doyle et al., 2002; Silver, 1999; Steadman et al., 2000). Recent articles however have put these findings into question (Guy et al., 2005; Walters, 2003).

The results of the present study suggest only a limited degree of predictive accuracy, given the fact that statistical significance as well as predictive validity varied considerably between the different subsamples (violent offenders vs. sexual offenders) as well as the target infractions (physical aggression vs. verbal aggression vs. physical and verbal aggression).

In our analyses, the level of statistical significance was reached only for the prediction of verbal aggression for the whole sample as well as for the sexual offenders subsample. There, the PCL:SV total score reached a significant IRR of 1.13 (for the whole sample) and of 1.15 (for the sexual offenders), while the PCL:SV factor 2 scores reached a IRR of 1.20 (whole sample) and of 1.255 (sexual offenders).

This predictive effect could not be found for violent offenders - a result that is supported by the findings of Buffington-Vollum (Buffington-Vollum, Edens, Johnson, & Johnson, 2002) for the PCL-R, from which the PCL:SV is derived. Therefore, Buffington-Vollum's hypothesis that restrictive environmental factors of the prison setting may lead to an inhibition of otherwise violent subjects also seems a plausible explanation for the ineffectiveness of the PCL:SV in predicting physical or verbal misconduct of violent offenders while in prison. These results suggest both that it may be reasonable to use different tools to assess different types of offenders in prison as well as that factors which are predictive for violent infractions in freedom, are not necessarily predictive for violent infractions in

prison. Therefore, instruments specifically designed for assessing institutional misconduct may be needed to predict prison infractions at a satisfactory level of reliability. Cunningham, Sorensen, and Reidy's Risk Assessment Scale for Prison (RASP; 2005, 2006) is an example of such an instrument which might prove to fulfill these requirements.

Interestingly, the diagnosis of psychopathy (using the cut-off score of 18 that was suggested by Hart et al., 1995) was not related to prison misconduct in this sample at all. This finding can be explained by the fact that in European studies on the predictive validity of the PCL-R, participants scored lower than participants in studies from North America (Grann, Langstrom, Tengstrom, & Kullgren, 1999; Hartmann, Hollweg, & Nedopil, 2001; Stadtland, Kleindienst, Kroner, Eidt, & Nedopil, 2005; Tengstrom, Grann, Langstrom, & Kullgren, 2000). Therefore, the North American PCL:SV cut-off score of 18 may not be valid in Europe (Urbanik et al., 2007).

The direct conversion of the PCL-R items to PCL:SV items, though legitimate (Cooke et al., 1999), might be regarded as a weakness of our study, since Cooke's algorithms do not produce ideal results for PCL:SV Items 11 and 12. In the PCL:SV, any history of antisocial behavior is considered (regardless of whether it results in arrest, charge, or conviction) and the rating is based on the frequency, diversity, and persistence of antisocial behavior. In contrast, only arrests, charges, or convictions are taken into consideration in the PCL-R. This means that the algorithms may slightly underestimate the ratings for PCL:SV items 11 and 12.

The results of this study are relevant in several respects. In penitentiaries, the early detection of potentially aggressive prisoners is important for effective risk management, thus minimizing the physical risk for other inmates as well as security officers.

The results of this first-time evaluation of the predictive accuracy of the PCL:SV, a statistically validated risk assessment tool, among a prison population of violent and sexual offenders in the German-speaking area not only demonstrates its uses and limitations, but also the need for more validation studies in the German-speaking part of Europe.

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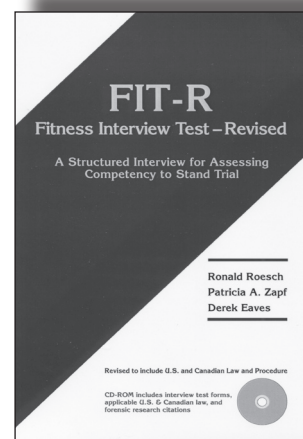
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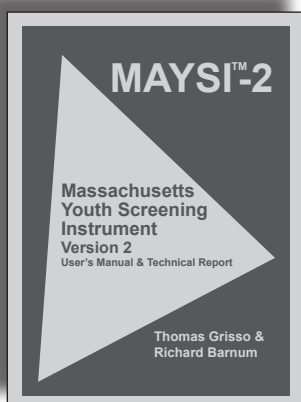
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International Journal of Forensic Mental Health

The *International Journal of Forensic Mental Health* is the official publication of the International Association of Forensic Mental Health Services, and the journal is a benefit of membership. The journal, a peer-reviewed bi-annual periodical devoted to research and practice in the field of forensic mental health, publishes empirical articles, descriptions of forensic programs and services, legal reviews, case studies, and book reviews.

The *International Journal of Forensic Mental Health* is intended to provide an international forum for disseminating research and practical developments to forensic mental health professionals. Forensic populations include both adults and youth involved in the criminal justice system, particularly mentally disordered offenders and sex offenders. The focus will be on forensic issues such as criminal responsibility, competency or fitness to stand trial, risk assessment, family violence, and treatment of forensic clients. The journal will reflect the international audience represented by the International Association of Forensic Mental Health Services, and articles comparing the law and/or practice in different countries are encouraged.

The target audience for the journal is psychiatrists, psychologists, social workers, nurses, administrators, lawyers, and other professionals whose research or practice focuses on forensic mental health.

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The editor of the journal as of 2009 is Professor Stephen Hart. He may be reached at the following address and phone numbers:

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