The Colorado Sex Offender Risk Scale

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ABSTRACT. This study documents the development of an adult sex offender risk assessment tool. A sample of 494 sex offenders were followed for an average of 30 months. A risk scale was developed based upon criminal and therapeutic outcomes. The final risk scale included prior juvenile felony convictions, prior adult felony convictions, failure of the first or second grade, not being employed, victim being intoxicated, the perpetrator reporting not being sexually aroused during the crime, possession of a weapon during the crime, denial in therapy, sexual deviance in therapy, and motivation in therapy. The risk scale provided significant relative risk ratios against program failure at 12 and 30 months. Overall, those scoring high on the risk tool were 372% as likely to fail as those scoring low.

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Risk assessment is a key component of correctional population management. Research pertaining to offender risk of supervision failure dates back to the 1920s (Hart, 1923; Warner, 1923). However, research specifically targeting the risk assessment of adult sexual offenders has occurred only within the past two decades. In these assessments, a broad range of factors has been examined including demographics, developmental history, criminal history, sexual offense history, and general sexual history of the offender (e.g., Hanson & Bussiere, 1996).

Criminal history, which includes types and numbers of crimes committed, sentencing, and parole/probation revocation, has often been the focus of risk assessment. In addition, broader history associated with criminal behavior such as personality has also been the focus of work. A number of personality themes have developed in the literature along this line such as psychopathy, impulsivity, and personality disorders (Hare, 1991; Harris, Rice, & Cormier, 1991; Harris, Rice, & Quinsey, 1993; Hart, Kropp, & Hare, 1988; Prentky & Knight, 1991). Indeed, these personality variables are also seen in treatment situations where the underlying character structure results in difficult treatment and poor outcome.

Sexual history and the index crime are, of course, usually more closely linked to the specific sexual crimes. Here, a number of risk factors have been identified. These include prior sexual offending history (Hall, 1995), deviant arousal or versatility of sexual offending (Barbaree & Marshall, 1988; Serin, Malcolm, Khanna, & Barbaree, 1994), gender of victims (Hanson, 1998; Hanson & Bussiere, 1996), age of victims (Barbaree & Marshall, 1988), stranger victims (Hanson, 1998), and the age of the offender.

There seems to be far less work in the area of "dynamic indicators," or variables that tend to change with time. An example might be the offender's response to therapy and therapists. This could include motivation, denial, readiness to change, and social support. Again, these may also be seen as being driven by the same personality problems that contributed to the criminal behavior in the first place.

Factors that predict risk of sexual re-offense vary considerably across research, partially because the studies and the samples differ. For example, studies often vary in how risk and recidivism are defined. Recidivism is usually defined as re-arrest for any crime, re-arrest for a violent crime, sex crime re-arrest, or sex crime conviction and recommitment. Furby, Weinrott and Blackshaw (1989) explain the differences and rationales for these definitions. These common measures of recidivism rely on official records of police and criminal justice system intervention. Unfortunately, official record data often underreports actual offending behavior because many sex offenses go unreported (Kilpatrick, Edmunds, & Seymor, 1992; Smith, Letourneau, Saunders, Kilpatrick, Resnick, & Best, 2000). This affects the research in that there is difficulty in collecting reliable follow-up re-offense data. A less common outcome variable is treatment or supervision compliance, a measure that does not depend completely on official reports.

Considerable support in the literature exists for using revocation and treatment failure variables as risk indicators. Failures in supervision and treatment have been found to be significantly related to future re-arrest. Marques, Day, Nelson, and West (1994), in a carefully designed and executed study of the effects of sex offender treatment on an incarcerated population, found that noncompliance with treatment and dropping out of treatment predict re-arrest in the community. Other investigations (Epperson, Kaul, & Hesselton, 1998; Hanson, Steffy, & Gauthier, 1993; Reddon, 1996) have found that offenders are at high risk for re-arrest when they fail to comply with institutional treatment. In addition, Hall (1995) also found that noncompliance with community supervision indicates high risk of re-arrest.

Barbaree, Seto, Langton, and Peacock (2001) recently completed a review of six scales often used for sex offense risk assessment. They also cross-validated the six scales by following a sample of 215 adult sex offenders for an average of 4.5 years. Two types of statistics relating to sexual re-offense were calculated. The first was the correlation between the scale and sexual re-offense. The second was an Area Under the Curve (AUC) statistic associated with the Receiver Operating Characteristic curve of each test (Hanley & McNeil, 1982). The greater the AUC is, the more valid the scale is. Each scale is described in detail below; scale correlation with sexual re-offense and AUC statistic information for each scale are provided to indicate relative validity of each scale.

The Violence Risk Appraisal Guide (VRAG; Harris, Rice, & Quinsey, 1993) is often used in sex offense risk work although its original intent was in the assessment of violence in general. It is composed of 12 items including (1) living with both biological parents until the age of 16, (2) elementary school maladjustment, (3) history of alcohol problems, (4) marital status, (5) nonviolent offense history, (6) failure on prior conditional release, (7) age at index offense, (8) index victim injury, (9) female index victim, (10) personality disorder, (11) schizophrenia, and (12) Hare's (1991) psychopathy scale score. The correlation of VRAG scores and sexual re-offense is not significant ($r = .11$, n.s.) and has an AUC of .61.

The Sex Offender Risk Appraisal Guide (SORAG; Quinsey, Harris, Rice, & Cormier, 1998) consists of 14 items of which 10 are from the VRAG. The items in common with the VRAG include: (1) living with both biological parents until the age of 16, (2) elementary school maladjustment, (3) history of alcohol problems, (4) marital status, (5) nonviolent offense history, (6) failure on prior conditional release, (7) age at index offense, (8) personality disorder, (9) schizophrenia, and (10) PCL-R score. Additional items specific to the SORAG and which make the scale more sex offense sensitive include: (11) violent offense history, (12) sexual offense history, (13) female index victim under the age of 14, and (14) phallometrically measured deviant sexual interests. The SORAG has a correlation of .17 ($p < .05$) with sexual re-offense and an AUC of .70.

The Rapid Risk Assessment of Sexual Offense Recidivism (RRASOR; Hanson, 1997) is comprised of only four items, including (1) number of prior charges for sexual offenses, (2) age upon next risk less than 25, (3) any male victims, and (4) extra-familial victims. The RRASOR has a correlation of 0.26 ($p < .05$) with sex re-offense and an AUC of .77. While statistically significant and predictive, one wonders if four items are enough for this type of work.

The Static-99 (Hanson & Thornton, 1999) has 10 items in total. The first 4 are those of the RRASOR. Additional unique items include (5) prior sentencing dates, (6) any convictions for non-contact sexual offenses, (7) non-sexual, violent index offense, (8) prior non-sexual, violent offense, (9) any stranger victims, and (10) cohabitation status. The Static-99 has a correlation of .18 ($p < .05$) with sex re-offense and an AUC of .70.

The Minnesota Sex Offender Screening Tool-Revised (MnSOST-R; Epperson, Kaul, & Hesselton, 1998) includes 16 items across historical and institutional variables. They include (1) number of sex offense convictions, (2) length of sex offense history, (3) being under supervision at time of a sex offense, (4) public place sex offense, (5) threat of force or use of force during sex offense, (6) multiple acts perpetrated on a single victim during a single sex offense incident, (7) number of different victim age groups, (8) victim between 13 and 15 and offender 5 or more years older, (9) stranger victim, (10) adolescent antisocial behavior, (11) drug or alcohol abuse in year prior to offense, (12) employment history, (13) discipline in prison, (14) substance abuse treatment in prison, (15) sex offender treatment in prison, and (16) age at time of release. The MnSOST-R has a correlation of .14 (n.s.) with sex re-offense and an AUC of .65 (n.s.).

Finally, the Multifactorial Assessment of Sex Offender Risk of Recidivism (MASORR; Barbaree, Seto, & Maric, 1995) has 6 general areas including (1) offense history, (2) PCL-R scores, (3) phallometrically derived deviant sexual interests, (4) social competence based on intelligence, marital status, and employment, (4) post-treatment ratings of motivation, (5) post-treatment behavior change, and (6) post-treatment clinical impression of risk. The post-treatment MASORR has a correlation of .12 (n.s.) with sex re-offense and an AUC of .60 (n.s.).

The Colorado Division of Criminal Justice worked in consultation with representatives of the state Sex Offender Management Board (SOMB) to develop a risk assessment screening instrument for use in the identification of sexually violent predators. It was our intention to collect some of the data found in the existing risk scales but to develop a new scale that was specific to and optimized for use in Colorado. This work describes the process that resulted in the Colorado Adult Sex Offender Risk Assessment Scale.

METHOD

Participants

The sample consisted of 494 adult male sex offenders who were on probation, on parole, in community corrections (prison diversion), and in prison treatment between December 1, 1996 and November 30, 1997. Several jurisdictions participated in the study including four county probation districts, one private community corrections organization, two parole counties, and two phases of the Colorado Prison Sex Offender Treatment Program. Of the 494 subjects, 218 were on probation, 47 on parole, and 229 in prison.

The sample consisted of offenders convicted of the following crimes: sexual assault (first, second, and third degree, 26.0%), sexual assault on a child (54.4%), exposure (2.2%), assault (1.7%), kidnapping (2.5%),

exploitation of a minor (3.2%), and other (10.0%). Eighty percent (80%) of the sample consisted of adult male sex offenders meeting the definition of Sexual Predator Crimes pursuant to S.B.97(84) (i.e., convicted of one of five felony sex crimes: first, second or third degree sexual assault, sexual assault on a child, or sexual assault on a child by a person in a position of trust). The remaining sex offenders (20%) did not meeting these strict criteria.

Design

The intent of this study was to collect a large number of potentially predictive variables to be compared to outcome at 12 months. The most predictive set of variables would then form a risk tool that would subsequently be cross-validated on outcomes at 30 months. As such, descriptive and univariate statistics are provided for the 12 month outcome point. Prediction of program failure is provided for the 12 month and 30 month time points as well as a prediction against combined failure at either of the points in time.

Measures

Data were collected on a number of dimensions related to failure in sex offender treatment and re-offense, according to the research literature and the clinical experience of members of the SOMB Assessment Committee. Assessed variables included demographics, developmental history, educational background, sexual, juvenile, and adult criminal histories, as well as current offense characteristics. Dynamic indicators included interpersonal abilities, treatment variables, and patient behavior.

Histories. A form was developed and used to collect information focused on demographics, juvenile and criminal history, current crime factors, victim characteristics, and other case descriptions that are typically used by decision makers who handle the case. Data was amassed from state records on the offenders in the study. The SOMB Research Assessment Committee also developed an additional history questionnaire based on a literature review and clinical discussions within the Committee. This questionnaire was completed by the therapists after the offender had entered treatment. Types of questions included school failure, family stability, index crime arousal patterns, and prior treatment (see Table 1).

TABLE 1. History Variables at Intake and Outcome at 12 Months

Demographic Characteristics	Percent of Total Sample	Of that Percentage Success	Failure	χ^2	p
Not Employed Full Time	48%	45%	55%	1.70	.192
Marital Status				15.66	.008
Never Married	35%	38%	62%		
Common Law	8%	41%	59%		
Married	27%	59%	41%		
Separated/Divorced	27%	55%	45%		
Developmental		Success	Failure	χ^2	p
Held Back in School	26%	46%	54%	0.21	.651
Failed 1st or 2nd Grade	9%	30%	70%	2.72	.099
Frequently Relocated as a Child	39%	38%	62%	4.92	.027
Education				4.19	.245
11th Grade or Below	30%	31%	69%		
HS Diploma	22%	55%	45%		
GED	14%	45%	55%		
Some College/Degree	26%	54%	46%		
Graduate Degree	4%	45%	55%		
Criminal History:		Success	Failure	χ^2	p
1+ Prior Felony Conviction(s)	38%	35%	65%	17.99	.001
1+ Sex Offense in Last 5 Years	9%	32%	68%	4.39	.036
1+ Juvenile Felony Conviction(s)	14%	40%	60%	2.11	.147
Characteristics of the Index Crime:		Success	Failure	χ^2	p
On Probation When Arrested	13%	30%	70%	9.96	.002
On Parole When Arrested	2%	14%	86%	3.41	.065
Used a Weapon	7%	42%	58%	0.64	.423
Used Physical Force	31%	39%	61%	3.05	.081
Sexual Assault Was NOT Arousing	21%	26%	74%	10.69	.001
Crime Was Adult Rape	37%	42%	58%	2.15	.142
Victim Was Drugged	16%	35%	65%	2.95	.086
Perpetrator Was Intoxicated	46%	40%	60%	5.99	.014
Victim Was a Relative	38%	57%	43%	4.70	.030
Relationship to Victim				13.19	.040
Incest	4%	41%	59%		
Relative, Not Living Together	29%	55%	45%		
Friend	29%	48%	52%		
Acquaintance	20%	35%	65%		
Stranger	14%	60%	40%		
Relationship Unknown	3%	33%	67%		
Gender of Victim				0.33	.846
Both	6%	53%	47%		
Male	11%	44%	56%		
Female	83%	48%	52%		
Prior Sex Offense Treatment	39%	34%	66%	10.97	.001

Dynamic Indicators. The SOMB Assessment Committee identified several clinical issues that they believed were central to dangerousness. The Committee developed an instrument (CO-SOMB Checklist; see Table 2) that captured and quantified these dynamic factors. The Committee identified eight factors, including motivation, denial, empathy, readiness to change, social skills, interpersonal competence, positive social support, deviant sexual practices, and treatment compliance. The instrument had those eight scales with eight items under each scale. Endorsements were made on a 1 through 5 scale. Therapists were instructed to score the offender on the SOMB Checklist during the first month of therapy.

Outcome Measures. At risk to fail was defined as: revocation, revocation pending, negative treatment termination, absconded, commission of a new sex crime, and being on the brink of failure according to the supervising officer or prison therapist. This is admittedly a very broad definition of failure and was chosen due to the legislative mandate for data collection.

RESULTS

Outcome Data

Using the above definition of failure, 54% (N = 267) of the sample had failed at 12 months and 40% (N = 197) were considered failures at 30 months. Oddly, 159 who were considered failures at 12 months were back in programs and in good standing at 30 months. Therefore, the subjects that are regarded as failures are a somewhat different group depending upon the point in time being considered.

Histories

Table 1 provides data on the history variables and percentages of those that succeeded and those that failed. For example, 48% of the total sample were Not Employed Full Time at the point of their arrest. Of that 48%, 45% were successful in treatment at 12 months and 55% were not. Additionally, Chi Square statistics and p values are provided.

Marital status was significant such that never married and common law married perpetrators were more likely to fail. Developmental histories revealed that Frequent Relocation was associated with failure. Conviction histories revealed significantly higher failure rates for those

TABLE 2. CO-SOMB Scales Used in Risk Tool

	Not at All					Very Much
Motivation:						
1. Verbalizes desire for treatment.	0	1	2	3	4	5
2. Agrees with court order for intervention.	0	1	2	3	4	5
3. Pays attention to therapist.	0	1	2	3	4	5
4. Arrives for appointments on time.	0	1	2	3	4	5
5. Doesn't complain about homework.	0	1	2	3	4	5
6. Actively participates in therapy.	0	1	2	3	4	5
7. Completes treatment requirements.	0	1	2	3	4	5
8. Seeks additional help.	0	1	2	3	4	5
Denial:						
1. Denies actual facts of offense.	0	1	2	3	4	5
2. Denies wrongness of actions.	0	1	2	3	4	5
3. Minimizes prior offenses.	0	1	2	3	4	5
4. Portrays self as victim.	0	1	2	3	4	5
5. Blames others for the crime.	0	1	2	3	4	5
6. Holds grudge against "system."	0	1	2	3	4	5
7. Says victim "wanted it."	0	1	2	3	4	5
8. Says therapy is unnecessary.	0	1	2	3	4	5
Deviant Sexual Practices:						
1. Has no socially appropriate sexual outlet.	0	1	2	3	4	5
2. Engages in many forms of deviant sexuality.	0	1	2	3	4	5
3. Obsessed about deviant sexual practices.	0	1	2	3	4	5
4. Engages in bizarre sexual practices.	0	1	2	3	4	5
5. Poor control of sexual behavior.	0	1	2	3	4	5
6. Talks constantly about sex.	0	1	2	3	4	5
7. Nothing seems "off limits" sexually.	0	1	2	3	4	5
8. Masturbates too much.	0	1	2	3	4	5

with one or more prior adult felony convictions (65%) and one or more sex offenses in the last 5 years (68%). However, prior juvenile felonies did not predict outcome.

With regard to the index crime, being on probation when arrested was also significantly associated with poor outcome, with 70% failing. Not being sexually aroused and the perpetrator being intoxicated were both significantly predictive of failure. The victim being a relative was a positive indicator of success. The gender of the victim and the use of a weapon or physical force were not associated with the outcome.

Finally, prior treatment for sex offenses was a significant indicator of failure (66%).

Dynamic Indicators

The dynamic therapy risk elements were collected with the CO-SOMB. This device was created specifically for this study. A new instrument of this type should have evidence of internal consistency, inter-rater reliability, and validity. Given the constraints of this data collection process, only internal consistency alpha coefficients are available. They range from .89 to .93, indicating that they are quite reliable.

As indicated in Table 3, there were significant differences between ratings of those who had failed and those who had succeeded on all sub-scales of the CO-SOMB. Mean ratings for denial and deviant sexual practices were significantly higher for those who failed than for those who did not fail within the time period. In addition, those who failed were rated significantly lower on all other subscales.

While all checklist scales were significantly related to failure, Motivation (α = .91), Denial (α = .93), and Deviant Sexual Practices (α = .92) (see Table 3) were the most unique and independent of each other. Other scales were highly inter-correlated. Indeed, the scales inter-correlated from relatively little at .01 (Deviant Sexual Practices and Empathy) to too much at .81 (Readiness to Change and Empathy).

Risk Assessment Scale Development

The scale was developed using outcome data from the 12 month point in time. It was then cross-validated against the 30 month outcomes. The scale was developed using stepwise regression and forced entry to determine what unique set of factors would empirically predict negative outcome. Because some variables may co-vary with each other, factors that were significantly related to negative outcome at the point of univariate analysis (presented above) may fall out of the analysis once multiple predictors are considered simultaneously. Further, risk assessment scale development requires parsimony. That is, a handful of variables will likely hold the greatest predictive power and after these are identified, additional variables generally will add relatively little to the model's accuracy.

Specifically, while significant at a univariate level, the following variables failed to add significant predictive power when combined in a multivariate equation: marital status, frequent relocation as a child,

TABLE 3. Dynamic Therapy Risk Variables

CO-SOMB Scale	Success	Failure	t	p
Motivation*	26(5.6)	22(5.4)	5.01	.001
Denial*	20(6.3)	23(6.1)	−4.11	.001
Empathy	22(5.8)	19(5.6)	3.37	.001
Readiness to Change	23(5.8)	20(5.4)	4.23	.001
Social Skills	24(4.9)	21(4.7)	5.42	.001
Interpersonal Competence	23(5.4)	20(4.7)	4.72	.001
Positive Social Support	21(5.8)	19(5.5)	2.48	.014
Deviant Sexual Practices*	19(6.5)	22(5.7)	−3.21	.001
Taking Care of Business	24(5.9)	21(4.6)	4.46	.001

Note: Those scales with * are included in the risk scale.

number of sex offenses in the last 5 years, being on probation, the perpetrator being intoxicated, and the victim being a relative. Having prior sex offender treatment also predicted failure in the outcome measure, but the use of this in a risk scale would oddly lead to punishment for going through treatment. As such, this variable was not included. Conversely, a number of variables that were not significant at the univariate level added significant predictive power when combined with other variables in the regression formula. These included number of juvenile felonies, failing first or second grade, and possessing a weapon during the index crime. A multiple regression of 10 final items provided an R of .53 and an R^2 of .28 (F (10, 483) = 5.19, p = .001).

This 10-item actuarial risk assessment scale was the final product of the Sex Offender Management Board for use with sex offenders in Colorado correctional placements. Each item is to be scored 0 or 1 (no or yes, respectively), so an offender can receive a score of 0 to 10. Scores of 4 and above represented the best trade-off between sensitivity and specificity and, as such, that cut-off is used. The scale is presented in Table 4.

12-Month Prediction. The scale predicts that offenders who score 0-3 points on the 10 factors in Table 4 have approximately a 50-50 chance of re-offending. Half of the offenders scoring 0-3 will be revoked or on the brink of failure within 12 months, and the other half will be successful. This inability to confidently identify lower risk offenders is a finding consistent with the risk literature that clearly indicates the predictive power of actuarial tools lies in identifying at-risk offenders,

TABLE 4. Colorado Division of Criminal Justice Sex Offender Risk Assessment Scale

OFFENDER HISTORY:

1. The offender has one or more juvenile felony convictions or adjudications.
(Data Sources: Official records, PSIR, self-report obtained during the Sex Offense Specific Mental Health Evaluation required by the SOMB Standards.)
2. The offender has one or more prior adult felony convictions.
(Data Sources: Official records, PSIR, self-report obtained during the Sex Offense Specific Mental Health Evaluation required by the SOMB Standards.)
3. The offender failed first or second grade.
(Data Sources: Education Records, PSIR, self-report obtained during the Sex Offense Specific Mental Health Evaluation required by the SOMB Standards.)
4. The offender was not employed full time at the time of arrest.
(Data Sources: PSIR, self-report obtained during the Sex Offense Specific Mental Health Evaluation required by the SOMB Standards.)

INSTANT CRIME:

5. The victim was intoxicated when the crime was committed.
(Data Sources: Victim Statement, PSIR, Police Report, self-report obtained during the Sex Offense Specific Mental Health Evaluation required by the SOMB Standards.)
6. The offender reports he was NOT sexually aroused during the current crime.
(Data Sources: Self-report, Sex Offense Specific Mental Health Evaluation.)
7. The offender possessed a weapon during the current crime.
(Data Sources: Victim Statement, PSIR, Police Report, Mental Health Evaluation.)

CURRENT SCORES ON SOMB Dynamic Indicators Checklist:

8. The offender scored 20 or above on the CO-SOMB Denial Scale.
9. The offender scored 20 or above on the CO-SOMB Deviancy Scale.
10. The offender scored less than 20 on the CO-SOMB Motivation Scale.
(Data Source for 8, 9,10: Sex Offense Specific Mental Health Evaluation required by the SOMB Standards.)

not in identifying offenders who will not re-offend (Hanson, 1998; Quinsey et al., 1998).

Offenders who score 4 or more points on the DCJ Sex Offender Risk Scale are at greater risk of failure. One method to model differential risk is through the calculation of Odds Ratios. An Odds Ratio is the relationship between the odds of an outcome for one group compared to the odds of that outcome for another group. In the current case, some subjects are in a group with a high risk scale score and other subjects are in a group with a low risk scale score. The odds of failing are higher for those with the high scale scores and that Odds Ratio is 2.05 (95% Confidence Band = 1.21 to 3.47). The interpretation of this statistic is that those scoring high on the scale are 205% as likely to fail as those scoring low on the scale.

30-Month Prediction. Because the outcome at 12 months was used t actually choose the items for the risk tool, there is a potential for uniqu dependencies that may not cross-validate. As such, a cross-validation (some type of the tool is needed. A 30-month outcome is not only longe in time but also is more independent of the development procedur Here the Odds Ratio for failure prediction is 1.86 (95% Confidenc Band = 1.12 to 3.08). It is gratifying to see that there is very litt "shrinkage" in the risk ratio from the 12-month time point. It is apprec ated that a time-based cross validation is only one method and that cross-validation against an independent sample would make this wor stronger.

Overall Prediction. Somewhat counter-intuitively, subjects wer able to be failures at the 12-month point but then get back into treatmer and be considered a success at 30 months. As such, another way to ap proach the outcome data is to model those subjects that were a failure a *either* 12 months *or* at 30 months. In this case, an Odds Ratio of 3.7 (Confidence Band = 1.73 to 7.99) is found. This means that there is 372% greater chance of someone with a score of 4 or greater failing tha someone with low risk score.

Additional statistics were calculated to make these results comparabl to those reviewed in the literature. The correlation between the curren continuous scale and the overall outcome was .23 ($p < .05$). The correla tion between the current scale dichotomized at 4 and the overall outcom was .17 ($p < .05$). The ROC curve resulted in an AUC of .64 ($p < .05$).

DISCUSSION

The intent of this work was to build a sex offense risk scale that migh be used to aid in the management of offenders in the State of Colorado We collected a broad range of data across static and dynamic variable built a scale of 10 items based upon outcome at 12 months, an cross-validated the scale at 30 months. A number of the items were con sistent with those found in other instruments and a number of item were quite unique to the current work. The scale appears to be as vali as most others. It is probably best discussed item by item.

The Colorado Sex Offender Risk Scale

Item One. Juvenile convictions/adjudications. Early onset of delin quent or aggressive behavior is frequently cited in the criminology liter

ature as an important risk factor. Hawkins and Catalano (1993) have summarized their review of 30 years of delinquency research on risk factors for co-occurring problem behaviors, including delinquency, dropout, teenage pregnancy, substance abuse, and violence. Those who endorse the social development model of delinquency propose that specific factors cause the onset, maintenance, and continuation of delinquent careers and that these factors occur in relation to the chronological development of the child (Elliott, 1994; Farrington, 1986, 1991).

Item Two. Prior adult felony convictions. The common adage "past behavior predicts future behavior" is frequently mentioned in risk research. In fact, prior adult criminal history is usually the strongest predictor of future criminality, and nearly every risk instrument contains some measure of this factor. In criminology research, this information is relatively easily obtained from electronic files and institutional records, increasing its value to researchers.

Item Three. The offender failed first or second grade. As mentioned in the discussion for Item One, above, the delinquency research clearly identifies evidence of early childhood problems to correlate consistently with adult criminality. Researchers studying sex offender risk in Canada have identified "permanent separation from both parents before the age of 16" as a predictor of general violence and sexual violence (Quinsey, 1984). This item is also even more closely related to the "elementary school maladjustment" items found in both the VRAG and SORAG. In young children, these could be the precursors of conduct disorder. Children with chronic ill health or central nervous system damage have three to five times the risk of conduct disorders (Brown, Chadwick, Shaffer, Rutter, & Traub, 1981; Cadman et al., 1986). Loeber and Dishion (1983) found that children who are aggressive at ages four to six have an increased likelihood of developing conduct disorder, and as the aggression is combined with other behavior characteristics, the predictive power increases.

Item Four. Not employed full time at arrest. Employment has been identified by Hart, Kropp and Hare (1988) as linked to failure in sex offender populations. Additionally, this item is found in the MnSOST-R. Work in our office has consistently found employment status to be related to failure under supervision, on both probation and parole samples (English & Patzman, 1994; English, Chadwick, & Pullen, 1994; English & Mande, 1991). Hanson's (1998) study of dynamic risk factors found lack of accountability during leisure time to be correlated with re-arrest for a sex crime, and being employed full time could reflect having less free time to commit sex crimes. As we have suggested before (English & Mande, 1991), employment may reflect an individual's higher level of functioning (compared to those not employed), and lower functioning–as measured by unemployment–may predict failure.

Item Five. The victim was intoxicated when the crime was committed. This risk factor is one of many index crime characteristics collected and analyzed in the current study. The data element refers to intoxication by drugs, alcohol or both. This item is important because it likely reflects the method of operation used by the offender to increase the victim's vulnerability. Indeed, the offender often "assists" the victim toward this end.

Item Six. The offender reports he was NOT sexually aroused during the current crime. Therapists asked the offender if he experienced an erection during the index crime. It should be made clear that this is probably not the same issue as denial. Not surprisingly, this group was significantly more likely to receive a prison sentence for the current crime compared to probation or community corrections. It may tap individual aggression as measured separately from criminal history and behavior during the index crime. It also may measure attraction and interest in power, domination and violence rather than sex. Further analysis of this variable is necessary, but its value in the model is quite clear. The chi square analysis shows this item clearly separates the success and failure groups. Only 26% of the successful group scored positive for this factor compared with 74% of the group that failed, yielding a chi-square of 10.69 ($p < .001$) at the 12-month point.

Item Seven. The offender possessed a weapon during the current crime. Scoring a 1 on this item does not require that the offender use the weapon, only that he possesses a weapon on his person during the offense. Harris, Rice, and Quinsey (1993) found victim injury during the index crime to predict future sexual recidivism, but this factor does not require physical injury. Other measures of violence during the instant offense were analyzed (e.g., physical force) but this item revealed the most predictive power.

Item Eight. The offender scored 20 or more on the CO-SOMB Denial Subscale. The membership of the committee identified this key issue that they felt was linked to treatment failure and later re-offense, based on their clinical experience and their knowledge of the treatment literature. Denial is commonly identified as an important issue in sex offender management. Salter (1988) describes denial as occurring along a continuum, from denial of the acts themselves, to denial of fantasy and planning, to denial of the seriousness of the behavior, to denial of the difficulty in changing abusive patterns. Brake (1996) has identified four

levels of denial, and fortunately assisted in the development of the Checklist.

Item Nine. The offender scored 20 or more on the CO-SOMB Deviant Sexual Practices Subscale. As noted in the review of risk factors presented earlier in this report, deviant arousal has been found to predict recidivism, particularly when it is paired with psychopathy. It is, though, modeled through phallometric measures on the SORAG.

Item Ten. The offender scored below 20 on the CO-SOMB Motivation Subscale. This item reflects the extent to which the offender is motivated to participate in sex offender treatment, as measured during the first month of involvement in therapy. Active participation in the intervention that is defined clearly by the SOMB's statewide standards for evaluation, treatment and monitoring is linked to successful supervision during the first 12 months of placement. This dynamic measure is most similar to the motivation element of the MASORR.

LIMITATIONS OF ACTUARIAL PREDICTION AND THE CURRENT STUDY

The science of risk prediction is imperfect and the development of this risk scale is no exception. In general, prediction variables are limited to data available in the file and to items that have a practical or theoretical link. The research literature is quite clear that criminal history, lifestyle and social adjustment variables, and opportunity are relevant and statistically powerful indicators of risk. However, actuarial methods are limited because offenders in any study group may vary on factors not measured. Prediction tools may lose efficiency over time. Generalizability of prediction tools across jurisdictions is questionable, and tools are at their best when used with populations on which they were developed (Farrington & Tarling, 1985).

There are several potential limitations specific to this study. First, in the best of worlds, we would develop a scale that was truly specific to sex offenders and sex re-offense. Several in the literature have suggested that a general criminal recidivism is what these types of scales usually tap and as such several of the available scales should do an adequate job. If only sexual offense related items are included, then far less of the variance in the outcome variables can be modeled. The current scale attempts to mix general criminal variables such as the felony history with instant sex crime variables with the dynamic therapist variables. This is far from perfect but perhaps a compromise.

Second, this scale was both developed and validated on the same sample. We attempted to add some independence through the use of two time points to collect outcome data. A better approach would be to have another sample of subjects, apply the risk scale to them, and then wait for outcome data. This approach was inconsistent with the time and appropriations given by the legislature to develop this scale. Our hope is to collect further data as funding and opportunity presents itself. Along that same line, our validity statistics will "shrink" upon cross-validation. As such, comparing our validation statistics to those of other instruments subjected to cross-validation such as in the Barbaree, Seto, Langton, and Peacock (2001) review is premature.

The third limitation involves the therapist ratings of the offenders. This dynamic set of variables captured by our checklist is laudable in that they may be the focus of therapy and are allowed to change over time (unlike history variables). The problem is that not only were the therapists endorsing the checklist but they were also providing the outcome data. As such, there is likely a lack of independence between the predictors and criterion. We attempted to moderate this by collecting the checklist in the first month of therapy and then collecting outcomes at 12 and 30 months.

The final obvious limitation is also related to the dynamic therapist checklist variables. We developed this instrument to collect data felt to be important. Unfortunately, new instruments require a great deal of psychometric work in the areas of reliability and validity. We were able to calculate internal consistency statistics but we were unable to collect other information such as inter-rater concordance. Work continues on this instrument.

In sum, it is hoped that this sex offense risk scale is viewed as a reasonable effort to develop an empirically-based, actuarial algorithm. It also is a fairly reasonable mix of historical, criminal, sexual, and therapeutic variables. Future work should be aimed at continuing the validation process and identifying dynamic, therapeutic variables that are an important addition to risk assessment in this area.

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