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ORIGINAL ARTICLE

Incarceration and Recidivism among Sexual Offenders

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Abstract The relationship between incarceration and recidivism was investigated in a sample of 627 adult male sexual offenders. Incarceration for the index offense was unrelated to sexual or violent recidivism. This was the case whether incarceration was examined as a dichotomous variable (incarceration vs. community sentence) or as a continuous variable (length of incarceration). Risk for sexual recidivism was assessed with a modified version of the Rapid Risk Assessment for Sexual Offense Recidivism. There was no evidence that the relationship between incarceration and recidivism was confounded or moderated by risk or that length of incarceration and recidivism were non-linearly associated. Sentencing sexual offenders to terms

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of incarceration appears to have little, if any, impact on sexual and violent recidivism following release.

Keywords Incarceration · Risk · Sexual offenders · Recidivism

Although the incarceration rate in Canada is considerably lower than that of the United States, it is still higher than in many other western countries (Public Safety and Emergency Preparedness Portfolio Corrections Statistics Committee, 2004). The cost associated with incarcerating offenders is substantial. The average annual cost of incarcerating one inmate in a federal penitentiary in Canada was over $80,000 in 2002–2003 (Public Safety and Emergency Preparedness, 2004). In contrast, the average annual cost of supervising an offender in the community was approximately $20,000 (Public Safety and Emergency Preparedness Portfolio Corrections Statistics Committee, 2004). Given that more money spent on incarcerating offenders leaves less money for other public services, such as education and health care, it is important to examine the effectiveness of incarceration for the management of criminal behavior and protection of the public.

Sentencing individuals convicted of criminal offenses to terms of imprisonment has a variety of purposes, such as specific deterrence, incapacitation, and retribution (Canadian Criminal Code, s. 718; Cullen, Lutze, Link, & Wolfe, 1989; Cullen, Latessa, Burton, Jr., & Lombardo, 1993). Specific deterrence refers to the reduction of reoffending achieved through fear of receiving a similar sentence should another crime be committed. For example, if an offender commits a sexual offense and is sentenced to a period of incarceration rather than some form of community supervision, that offender will be less likely to commit sexual offenses in the future because he or she now knows that a return to prison is a possible consequence. It seems reasonable to expect that taking away an offender's freedom by sentencing him or her to a prison term would (a) be sufficiently aversive to deter him or her from committing further crime (specific deterrence), (b) prevent harm to the community during the period of incarceration (incapacitation), and (c) cause the offender to suffer (retribution), which would provide victims and the larger community with a sense that justice has been done.

Although incarceration does incapacitate offenders and may provide some small comfort to victims and the community, the evidence for its deterrent effect is unimpressive (Gendreau, Goggin, & Cullen, 1999; Smith, Goggin, & Gendreau, 2002). Counterintuitively, some offenders may actually experience incarceration as *less* aversive than some alternative sanctions (Wood & Grasmick, 1999). Despite the lack of empirical support, however, almost 70% of judges rated specific deterrence as an important goal of sentencing in a recent Canadian survey (Bonta, Bourgon, Jesseman, & Yessine, 2005).

Gendreau and colleagues (Gendreau et al., 1999; Smith et al., 2002) have conducted meta-analytic reviews of research on the association between incarceration and recidivism. Gendreau et al. organized theorists and researchers' views on the relationship between incarceration and recidivism into three general schools of thought. From one perspective, incarceration is expected to deter further crime. In contrast, a second perspective conceptualizes prisons as schools of crime where offenders become further entrenched in a criminal lifestyle, thereby increasing recidivism. A third position is that prison has little effect on recidivism. It is also possible that the impact of incarceration on recidivism may be moderated by risk (for recidivism) or that recidivism rates may be distributed in a non-linear pattern across varying sentence lengths, such that effects consistent with any one of the three schools of thought may be observed depending on the offender's risk level and duration of incarceration (e.g., Dejong, 1997; Orsagh & Chen, 1988).

In the most recent of Gendreau and colleagues' meta-analyses, Smith et al. (2002) found that incarceration was only very weakly associated with recidivism. The same results were obtained whether incarceration was compared to non-incarceration (e.g., probation) or longer periods of incarceration were compared to shorter periods. Similar results were found when effects were examined by risk level. In all cases, the differences were extremely small and more often than not suggested that incarceration may be associated with very slight *increases* in recidivism. Finally, there was no evidence of a U-shaped distribution of recidivism rates across sentence lengths. These results suggest that the relationship between incarceration and general recidivism is minimal and it is not confounded or moderated by risk nor does there appear to be some optimal mid-length duration of incarceration that is most effective in reducing general recidivism.

To a lesser extent, the relationship between sentence length and recidivism in sexual offenders has also been examined (Hanson & Bussière, 1998). In their meta-analysis, Hanson and Bussière found results consistent with those of Gendreau and colleagues. Specifically, sentence length was unrelated to sexual, non-sexually violent, or general recidivism in sexual offenders. In the individual studies in the meta-analysis, however, the risk level of the offender was not taken into account in the examination of the relationship between incarceration and recidivism. Risk level may be an important consideration. Hypothetically, incarceration may deter sex offenders from committing further crimes but this effect could be masked if higher risk sexual offenders were more likely to be incarcerated for their offenses than lower risk sexual offenders. In other words, the relationship between incarceration and recidivism may be confounded with risk in sex offenders.

It is also conceivable that risk may interact with incarceration, such that the impact of incarceration depends on an offender's risk for recidivism. For example, it is possible that sexual recidivism is reduced by incarceration for low risk sexual offenders but not for high risk offenders or vice versa. Low-risk offenders may be more easily deterred by the experience of incarceration than high-risk offenders because they are not as entrenched in and committed to sexual offending. Alternately, incarceration may increase the likelihood of recidivism among low-risk offenders by exposing them to more deviant sexual offenders, whereas it may have little impact on recidivism among high-risk offenders. Finally, a non-linear relationship may exist between incarceration and recidivism in sex offenders. It is possible that medium-length periods of incarceration (e.g., 1 year) may reduce sexual recidivism, whereas shorter and longer periods have no effect on sexual recidivism.

It seems reasonable to speculate that sentencing could be related to risk (c.f., Andenaes, 1968) and there is some evidence that higher risk sexual offenders are more likely to receive more severe sentences (Berliner, Schram, Miller, & Milloy, 1995; Fitch, 1962; McCormick, Maric, Seto, & Barbaree, 1998). Although Gendreau and colleagues have convincingly demonstrated that incarceration has little effect on general recidivism, this remains to be thoroughly examined in sexual offenders. The primary purpose of the present study was (a) to examine the association between incarceration and sexual and violent recidivism while controlling for risk, (b) to consider whether incarceration interacts with risk, and (c) to address the possibility that there is a non-linear relationship between incarceration and recidivism in sex offenders.

Method

Participants

All participants were assessed at the Royal Ottawa Hospital, Sexual Behaviours Clinic, between 1983 and 1995. Follow-up data were available for 627 male offenders. Included in the current

study were offenders who were 18 years of age or older at the time of their index hands-on sexual offense against an adult or a child (i.e., under the age of 16 at the time of the offense), for which they were convicted. Mean age at time of assessment was 38.67 years (SD = 12.16) and ranged from 18 to 78. The total sample consisted of 288 incest offenders, 199 extrafamilial child molesters, 79 rapists, and 61 mixed offenders (i.e., falling into two or more of the above categories). The majority of the participants were assessed just prior to or just after their court appearance or sentencing.

This sample has been previously examined by Firestone et al. (1998, 1999), Firestone, Bradford, McCoy, et al. (2000), Firestone, Bradford, Greenberg, and Serran (2000), Firestone, Dixon, Nunes, and Bradford (2005), Firestone, Nunes, Moulden, Broom, and Bradford (2005), Greenberg, Bradford, Firestone, and Curry (2000), Greenberg, Firestone, Nunes, Bradford, and Curry (2005), Nunes, Firestone, Bradford, and Broom (2002), and Wexler, Firestone, Nunes, and Bradford (2005). The follow-up period has been extended by Wexler (2005; Wexler, Firestone, Nunes, & Bradford, 2005) since some of the earlier studies and it was this updated database that was used in the current research.

Procedure

Offenders were assessed at a forensic psychiatric unit regarding their index sexual offenses. Data were gathered at the time of assessment through file reviews, interviews, questionnaires, and physiological testing. Only a portion of the data collected in these assessments is examined here.

The Rapid Risk Assessment for Sexual Offense Recidivism (RRASOR; Hanson, 1997) was scored by the current authors from the information collected at the time of assessment and from criminal record data. The RRASOR consists of four items: (1) prior sexual offenses, (2) age at release, (3) victim gender, and (4) relationship to victim. The *prior sex offenses* item is coded from prior sexual convictions and charges. Convictions are weighted more heavily than charges and the higher of the two values is taken as the score for this item. RRASOR scores can range from 0 to 6, with higher scores reflecting greater risk. Hanson (1997) selected these four items from a larger pool of variables through multivariate statistical procedures. In their meta-analysis, Hanson and Morton-Bourgon (2004) found a medium association between the RRASOR and sexual recidivism (mean $d = .59$) and a small to medium association with violent (including sexual) recidivism (mean $d = .34$). In addition, good inter-rater reliability has been found with the RRASOR (Barbaree, Seto, Langton, & Peacock, 2001).

Scoring of the RRASOR generally followed the coding rules outlined in Hanson (1997). There were, however, some deviations from the rules. In our database, a distinction was not made between formal charges that did and did not result in conviction. Prior sex offenses, therefore, were scored using only the weighting for charges; that is, 1 to 2 charges or convictions received a score of 1, 3 to 5 charges or convictions received a score of 2, and 6 or more charges or convictions received a score of 3. Victim gender and relationship to victim were coded from information pertaining only to the index offense. Due to these deviations from the scoring procedure (Hanson), the instrument would be most accurately described as a *modified* RRASOR (RRASOR-M).[1]

Offense (i.e., prior and index offenses) and incarceration information was gathered from Canadian Police Information Centre (CPIC) records at the Ottawa Police Station, a national database of criminal arrests and convictions including INTERPOL reports from the Royal

[1] It was not possible to determine inter-rater reliability of the RRASOR-M in the current study because scores were computed from pre-existing variables in our database.

Canadian Mounted Police. For offenders who received a term of incarceration for their index offenses, the length of this term was coded by subtracting the index sentencing date from the date of release to the community. When a release date was not available, length of incarceration was coded as two thirds of the aggregate sentence.[2] In Canada, offenders are generally granted some form of conditional release upon serving two thirds or less of their sentence (Part II of the Corrections and Conditional Release Act). Only in exceptional cases are offenders detained past two thirds of their sentence.

Recidivism information was also gathered from the CPIC records. In the current study, recidivism data were coded for the first new charge or conviction after the index offense conviction or, if the offender was incarcerated for the index offense, after release to the community. We focused on only the first reoffense because it was expected to be most sensitive to any impact incarceration for the index offense might have. If the new charge or conviction was sexual, the offender was identified as a sexual recidivist. If the new offense was either non-sexually violent or sexual, the offender was identified as a violent recidivist.

Results

Data screening

The RRASOR-M and length of incarceration were both positively skewed. Logarithmic transformations were performed on these variables to correct this violation of normality. The analyses below were conducted with both the transformed and untransformed variables. The results were virtually identical in terms of statistical significance and effect size. Thus, only the untransformed results are reported here.

Description of the sample

Three hundred and ninety-nine (63.6%) offenders were sentenced to a period of incarceration for their index sexual offenses; the remainder were sentenced to some form of community supervision, such as probation. Among the offenders who were incarcerated, the mean sentence was 21.24 months ($SD = 19.91$), with the shortest sentence being 1 month and the longest 120 months. The unadjusted recidivism rates for the entire sample were as follows: 80 (12.8%) offenders sexually recidivated and 129 (20.6%) violently recidivated. Sexual and violent recidivism were highly intercorrelated, $r(627) = .75$. Average time of opportunity to reoffend was 8.11 years ($SD = 4.86$). All items of the RRASOR-M could be scored for 606 offenders; the mean was 1.24 ($SD = 1.23$) and the median was 1.

Relationship between incarceration and recidivism

We first examined the univariate relationship between recidivism, incarceration, length of incarceration, and the RRASOR-M. For the dichotomous incarceration variable, incarceration was coded as one and non-incarceration as zero. Similarly, recidivism was coded as one and non-recidivism as zero. These coding formats were used in all analyses. To examine the magnitude of the differences between recidivists and non-recidivists, Cohen's *d*s were calculated. By convention, *d*s of around 0.20, 0.50, and 0.80 are respectively considered small, medium, and large

[2] It was not possible to determine the proportion of offenders in the sample for whom the release date was estimated because a distinction had not been made in the database between reported and estimated release dates.

Table 1 Sexual recidivism, incarceration for index offense, and risk

Variable	Sexual recidivism: No		Sexual recidivism: Yes			95% CI	
	n	% or *M* (*SD*)	*n*	% or *M* (*SD*)	*d*	Lower	Upper
Incarcerated	547	63.1%	80	67.5%	0.09	−0.14	0.33
Length of incarceration (months)	345	20.94 (20.10)	54	23.15 (18.77)	0.11	−0.18	0.39
RRRASOR-M	529	1.15 (1.16)	77	1.86 (1.46)	0.59	0.35	0.83

Note. CI: Confidence Interval.

effect sizes (Cohen, 1992). The 95% confidence interval around *d* is also reported to provide an indication of the range of values for *d* that would be expected in 95% of other samples from the same population of sex offenders. In addition, statistical significance of *d* can be determined from the confidence interval. If the 95% confidence interval does not contain zero, the effect size is significantly different than zero ($p < .05$).

As shown in Table 1, sexual recidivism was not significantly associated with incarceration for the index offense and the effect size was very small. In addition to considering the association between sexual recidivism and the dichotomous incarceration variable, analyses were performed to examine the relationship between sexual recidivism and length of incarceration. These analyses were conducted only on the subsample of offenders who were sentenced to a term of incarceration. As shown in Table 1, sexual recidivism was not significantly associated with length of incarceration and again the effect size was very small. As expected, the RRASOR-M was significantly associated with greater likelihood of sexual recidivism (medium effect size). Somewhat surprisingly, however, the RRASOR-M was not significantly correlated with incarceration or with length of incarceration, $r(606) = .03$, $p > .05$ and $r(387) = .04$, $p > .05$, respectively.

A set of analyses parallel to those above was conducted to examine the relationship between violent (including sexual) recidivism, incarceration, length of incarceration, and the RRASOR-M. The results were virtually identical to those found for sexual recidivism. As shown in Table 2, violent recidivism was not significantly associated with whether or not offenders had been incarcerated for their index offenses or with length of incarceration. The RRASOR-M, however, was significantly associated with greater likelihood of violent recidivism.

Controlling for risk

One of the principal goals of the present paper was to examine the relationship between incarceration and recidivism once individual differences in risk level were taken into account.[3] Differences in risk level could conceal or inflate the relationship between incarceration and recidivism; that is, the relationship between incarceration and recidivism may be confounded by risk. Given the almost nonexistent association between incarceration and the RRASOR, however, we did not expect the results to change when risk was considered. Nevertheless, the association between incarceration and recidivism was again examined, but this time risk level was statistically controlled.

A series of logistic regressions were performed to examine the association between incarceration or length of incarceration and recidivism while controlling for risk. RRASOR-M was

[3] We also ran all the multivariate analyses with modified versions of the Static-99 and the Sex Offender Risk Appraisal Guide (SORAG) that were available for 216 of the offenders in the current study. The results were very similar to those found with the RRASOR-M. Thus, even when these more comprehensive measures of risk were used as control and moderator variables, there was still no indication that incarceration was related to recidivism.

Table 2 Violent recidivism, incarceration for index offense, and risk

Variable	Violent recidivism: No		Violent recidivism: Yes			95% CI	
	n	% or *M* (*SD*)	*n*	% or *M* (*SD*)	*d*	Lower	Upper
Incarcerated	498	62.9%	129	66.7%	0.08	− 0.11	0.27
Length of incarceration (months)	313	20.83 (20.39)	86	22.76 (18.11)	0.10	− 0.14	0.34
RRRASOR-M	483	1.12 (1.13)	123	1.71 (1.45)	0.49	0.29	0.69

Note. CI: Confidence Interval.

entered in the first block and incarceration or length of incarceration was entered in the second block. Odds ratios were reported. The odds ratio can be interpreted as the increase in the odds of recidivism that corresponded to an increase of one point in the predictor or, in the case of a dichotomous predictor, as the odds of recidivism in one group compared to the other (i.e., incarcerated vs. not incarcerated). For example, in Table 3 the odds ratio of 1.50 indicates that for every one-point increase on the RRASOR-M, the odds of sexual recidivism increased by 50%. An odds ratio of 1.00 would reflect no relationship between the predictor and the outcome. If the odds ratio associated with the RRASOR-M had been 1.00, the odds of recidivism would be equal at all values of the RRASOR-M. The confidence interval around the odds ratio provides an estimate of the range of values within which the odds ratio among other samples of the population of offenders would be expected to fall 95% of the time. For example, the odds ratio for the RRASOR-M was 1.50 but it would be expected that if the population from which this sample was drawn were sampled 100 times, in 95 of those samples the odds ratio would fall between 1.26 and 1.78. If the 95% confidence interval does not include 1.00, the odds ratio is statistically significant at the .05 level.

As shown in Table 3, the RRASOR-M was significantly associated with sexual recidivism. The addition of the dichotomous incarceration variable, however, did not significantly increase the association with sexual recidivism that was found with the RRASOR-M alone, $\chi^2(1,N = 606) = 0.07, p > .05$. The odds of sexual recidivism were 7% higher for offenders who were incarcerated for their index offenses than for those who were not incarcerated. This association between incarceration and sexual recidivism was not statistically significant. The same pattern

Table 3 Sequential logistic regression predicting sexual recidivism from RRASOR-M and incarceration

Scale	*B*	SE *B*	Wald	Odds ratio	95% CI
Block 1					
RRASOR-M	0.40	0.09	20.60*	1.50	1.26–1.78
Block 2					
RRASOR-M	0.40	0.09	20.42*	1.50	1.26–1.78
Incarcerated (yes/no)	0.07	0.26	0.07	1.07	0.64–1.79
Block 3					
RRASOR-M	0.41	0.16	6.23*	1.51	1.09–2.08
Incarcerated	0.09	0.42	0.04	1.09	0.48–2.46
RRASOR-M by incarcerated	− 0.01	0.20	0.00	0.99	0.67–1.45

Note. $\chi^2(1, N = 606) = 19.81$ for Block 1 ($p < .05$). $\chi^2(1, N = 606) = 0.07$ for Block 2 ($p > .05$). $\chi^2(1, N = 606) = 0.00$ for Block 3 ($p > .05$). SE: Standard Error. CI: Confidence Interval.

*$p < .05$.

Table 4 Sequential logistic regression predicting sexual recidivism from RRASOR-M and length of incarceration

Scale	*B*	SE *B*	Wald	Odds ratio	95% CI
Block 1					
RRASOR-M	0.40	0.11	14.19*	1.49	1.21–1.83
Block 2					
RRASOR-M	0.40	0.11	14.09*	1.49	1.21–1.83
Length of incarceration (months)	0.00	0.01	0.15	1.00	0.99–1.02
Block 3					
RRASOR-M	0.29	0.18	2.68	1.34	0.94–1.90
Length of incarceration	0.00	0.01	0.11	1.00	0.97–1.02
RRASOR-M by Length of incarceration	0.01	0.01	0.52	1.01	0.99–1.02

Note. $\chi^2(1, N = 387) = 13.66$ for Block 1 ($p < .05$). $\chi^2(1, N = 387) = 0.15$ for Block 2 ($p > .05$). $\chi^2(1, N = 387) = 0.53$ for Block 3 ($p > .05$). SE: Standard Error. CI: Confidence Interval.

*$p < .05$.

of results was found for the continuous length of incarceration variable and sexual recidivism (Table 4) as well as for both incarceration and length of incarceration and violent recidivism (Tables 5 and 6). These results indicate that even after controlling for risk, incarceration was not significantly associated with recidivism.

Interaction of risk and incarceration

To address the possibility that the relationship between incarceration and recidivism is moderated by risk in sexual offenders, the interaction term (i.e., RRASOR-M by incarceration or RRASOR-M by length of incarceration) was entered on the third block of the logistic regressions reported in Tables 3–6. In all analyses, the interaction between risk and incarceration or length of

Table 5 Sequential logistic regression predicting violent (including sexual) recidivism from RRASOR-M and incarceration

Scale	*B*	SE *B*	Wald	Odds ratio	95% CI
Block 1					
RRASOR-M	0.36	0.08	20.86*	1.43	1.22–1.66
Block 2					
RRASOR-M	0.35	0.08	20.69*	1.42	1.22–1.66
Incarcerated (yes/no)	0.07	0.22	0.11	1.07	0.70–1.64
Block 3					
RRASOR-M	0.32	0.14	4.95*	1.37	1.04–1.81
Incarcerated	−0.01	0.33	0.00	0.99	0.52–1.89
RRASOR-M by Incarcerated	0.06	0.17	0.11	1.06	0.76–1.47

Note. $\chi^2(1, N = 606) = 20.69$ for Block 1 ($p < .05$). $\chi^2(1, N = 606) = 0.11$ for Block 2 ($p > .05$). $\chi^2(1, N = 606) = 0.11$ for Block 3 ($p > .05$). SE: Standard Error. CI: Confidence Interval.

*$p < .05$.

Table 6 Sequential logistic regression predicting violent (including sexual) recidivism from RRASOR-M and length of incarceration

Scale	*B*	SE *B*	Wald	Odds ratio	95% CI
Block 1					
RRASOR-M	0.37	0.09	15.81*	1.45	1.21–1.74
Block 2					
RRASOR-M	0.37	0.09	15.66*	1.45	1.21–1.74
Length of incarceration (months)	0.00	0.01	0.32	1.00	0.99–1.02
Block 3					
RRASOR-M	0.31	0.16	3.80	1.36	1.00–1.85
Length of incarceration	0.00	0.01	0.00	1.00	0.98–1.02
RRASOR-M by length of incarceration	0.00	0.01	0.25	1.00	0.99–1.01

Note. $\chi^2(1, N = 387) = 15.77$ for Block 1 ($p < .05$). $\chi^2(1, N = 387) = 0.32$ for Block 2 ($p > .05$). $\chi^2(1, N = 387) = 0.26$ for Block 3 ($p > .05$). SE : Standard Error. CI Confidence Interval.

*$p < .05$.

incarceration was not statistically significant and did not add significantly to the previous block. Thus, there was no evidence that incarceration or length of incarceration was associated with recidivism differently depending on risk, as measured by the RRASOR-M.

Controlling for time at risk

Not surprisingly, opportunity to reoffend was significantly shorter among the offenders who were incarcerated for their index offenses compared to those who were not, $M = 7.34$ years ($SD = 4.58$) versus $M = 9.46$ years ($SD = 5.05$); $t(625) = 5.36$, $p < .05$. To control for time at risk, a series of sequential Cox regressions paralleling the logistic regressions reported above was performed. The results of the Cox regressions were virtually identical to those of the logistic regressions. To avoid redundancy, the results of the Cox regressions are not reported here. In all cases, the addition of incarceration or length of incarceration to the RRASOR-M did not significantly increase the association with recidivism found for the RRASOR-M alone and neither incarceration nor length of incarceration were significantly associated with sexual or violent recidivism. Similarly, none of the interaction terms were significantly associated with sexual or violent recidivism. These findings show that even after taking into account time at risk, incarceration was still not significantly associated with recidivism.

Non-linear relationship between length of incarceration and recidivism

Although the analyses above indicate that length of incarceration was not linearly associated with recidivism, it is possible that a non-linear relationship exists. For example, medium-length sentences may have an influence on recidivism more so than shorter or longer sentences. To address this possibility, the logistic and Cox regressions above were re-run with the quadratic (length of incarceration squared) and cubic (length of incarceration cubed) terms for length of incarceration added to the equation. In all cases, neither squared nor cubed length of incarceration was significantly associated with sexual or violent recidivism. Given that the result of the logistic regressions and Cox regression were very similar, only the odds ratios for the quadratic and cubic terms from the final block of each logistic regression are reported here. Squared length of incarceration was not significantly associated with sexual recidivism

(odds ratio = 1.00, 95% CI = 1.00 to 1.00) or violent recidivism (odds ratio = 0.93, 95% CI = 0.54 to 1.59). Cubed length of incarceration was also not significantly associated with sexual recidivism (odds ratio = 1.00, 95% CI = 1.00 to 1.00) or violent recidivism (odds ratio = 0.93, 95% CI = 0.54 to 1.59). The odds ratios and hazard ratios for these terms were virtually identical to those found with the linear term. These results indicate that there was not a significant non-linear association between incarceration and recidivism.

Discussion

In the present study, we examined the association between incarceration and recidivism in a sample of sex offenders. No significant association between incarceration and recidivism was found regardless of how incarceration was operationally defined, whether sexual or violent (including sexual) recidivism was examined, whether risk was controlled, and whether time at risk was controlled. Thus, we found no evidence to support either the deterrence or school of crime positions. In addition, our findings were at odds with the notion that the relationship between incarceration and recidivism is moderated by risk for sexual recidivism, at least as measured by the RRASOR-M. Moreover, the results were inconsistent with a U-shaped distribution of recidivism rates across lengths of incarceration (Orsagh & Chen, 1988). More generally, our findings do not suggest that there is some optimal length of incarceration for sexual offenders that maximally reduces recidivism compared to shorter or longer periods of incarceration.

Consistent with meta-analyses on both sexual (Hanson & Bussière, 1998) and general offenders (Gendreau et al., 1999; Smith et al., 2002), our results are most in line with the notion that incarceration has little, if any, impact on recidivism (e.g., Moffitt, 1983). In contrast, there is evidence that recent treatment programs for sexual offenders are effective at reducing sexual recidivism (Hanson et al., 2002; but for a more cautious interpretation of the treatment effectiveness literature see Rice & Harris, 2003). These findings support the routine use of alternatives to incarceration with sexual offenders who fall below some minimally acceptable risk level (e.g., Berliner et al., 1995). The benefits of such an approach in terms of cost-saving are obvious (Public Safety and Emergency Preparedness Portfolio Corrections Statistics Committee, 2004). Based on the current results, this money would benefit the community more if it were spent on effective treatment programs or on other public services, such as education and health care (cf. Gendreau et al., 1999).

Contrary to the evidence, many judges believe that incarceration does deter recidivism (Bonta et al., 2005). It is important to convey to judges and law- and policy-makers that the available evidence does not support this belief. Incarceration may still be justifiable, however, for very high-risk sex offenders to prevent reoffending through incapacitation; that is, their opportunities for sexual offending are greatly limited during their period of incarceration (at least against people outside correctional institutions). Given the relatively low official rates of sexual recidivism (Harris & Hanson, 2004), incapacitation would not be required for the majority of sex offenders.

Of course, risk management is not the only issue judges must consider in their sentencing decisions (Cole & Angus, 2003). In Canada, for example, the fundamental principle of sentencing is that "a sentence must be proportionate to the gravity of the offence and the degree of responsibility of the offender" (C.C.C., s. 718.1). Thus, regardless of a particular offender's risk for recidivism, incarceration may be desirable to the extent that the community wishes to exact retribution from sexual offenders for their crimes (but see Gendreau et al., 1999 for a caution against pursuing this goal in sentencing). Exacting retribution through incarceration, however, is very costly. In light of the fact that resources are limited, the community must balance its desire

for retribution with its need for more effective sex offender management strategies and essential services.

Not addressed by the current research is the possibility that the threat of incarceration may deter many people from committing their first sexual offense (i.e., general deterrence) even though it does not appear to deter recidivism (i.e., specific deterrence). If, however, the evidence from research concerning non-sexual crimes is any indication (Kleck, Sever, Li, & Gertz, 2005), we would expect incarceration to be as ineffective at general deterrence as it is at specific deterrence among sexual offenders.

Although we attempted to address various alternate explanations for the lack of association between incarceration and recidivism in sex offenders by examining the relationship with numerous statistical approaches, there are limitations of the current study that we were unable to address. Most obviously, the use of a non-random design raises the possibility that the groups differed on any number of variables of which we were not aware and for which we did not statistically control (Shadish, Cook, & Campbell, 2002). By necessity, however, almost all researchers have used such a design to study the association between incarceration and recidivism (Gendreau et al., 1999).

Another limitation concerns the absence of information about the conditions of incarceration for the offenders in the current study (Smith et al., 2002). It was unknown, for example, whether the incarcerated offenders were housed in "no frills" institutions or more "comfortable" institutions. For example, perhaps incarceration does deter sexual recidivism but only when the conditions are at their worst. We do not think this is likely to be the case, but greater confidence in the findings would be warranted had the conditions of incarceration been known and taken into account. In addition, we did not have data on participation in sex offender treatment and, therefore, were unable to examine it as a potential moderator of the relationship between incarceration and recidivism.

Third, our modifications to the RRASOR may raise concerns about predictive validity. For example, not distinguishing between convictions and charges and using victim information from only the index sexual offence may have underestimated the actual RRASOR score in some cases (D. Doren, personal communication, April 28, 2006). Despite these modifications, however, the association between the RRASOR-M and sexual recidivism in the current study ($d = 0.59$) was equal to that found for the RRASOR in Hanson and Morton-Bourgon's (2004) meta-analysis (average $d = 0.59$). Thus, the predictive validity of the RRASOR was not unduly compromised by our modifications.

Relatedly, the RRASOR may have a relatively narrow focus compared to some other actuarial instruments for assessing risk for sexual recidivism. Specifically, the RRASOR appears to focus more on sexual deviance, whereas the Static-99 (Hanson & Thornton, 2000) and the Sex Offender Risk Appraisal Guide (SORAG; Quinsey, Harris, Rice, & Cormier, 1998), for example, appear to incorporate more factors reflecting antisocial orientation as well as those indicative of sexual deviance (Hanson & Morton-Bourgon, 2005; Roberts, Doren, & Thornton, 2002). It is possible that different results would have been found had one of these more comprehensive instruments been used to estimate risk for recidivism in the current study. Unfortunately, we did not have sufficient data on these measures to examine them in the study proper. We did, however, have data on modified versions of these measures from a previous study (Nunes et al., 2002) for 216 offenders in the current sample. Even when these more comprehensive measures of risk were used as control and moderator variables, there was still no indication that incarceration was related to recidivism.

A fifth issue may potentially limit the extent to which our finding that incarceration was unrelated to risk generalizes to present day sentencing practices. Specifically, the offenders in the current study were sentenced prior to the availability of validated sexual recidivism risk

assessment instruments, such as the RRASOR. Whereas our findings suggest that high-risk sex offenders were just as likely as low-risk offenders to be sentenced to a term of incarceration, there is evidence from other researchers that some known risk factors for sexual recidivism are associated with incarceration (Berliner et al., 1995; McCormick et al., 1998). In addition, judges do currently appear to be interested in considering assessments of risk for sexual recidivism in their sentencing decisions (Bonta et al., 2005). To the extent that sentencing is now influenced by estimates of risk for sexual recidivism, our findings may not accurately reflect current practices. This is not, however, a threat to the validity of the present study. Our findings suggest that incarceration would not reduce recidivism among sex offenders once they are released regardless of whether or not estimated risk influences the decision to give a sentence of incarceration and the length of such a sentence.

Finally, the recidivism rates reported in the current study are based only on officially detected recidivism, which are undoubtedly an underestimation of the true rates of reoffending (Harris & Hanson, 2004). In addition, we defined recidivism rather narrowly as simple dichotomous variables and did not examine other interesting outcomes, such as severity (e.g., victim injury). Although the presence versus absence of recidivism is arguably one of the most important outcomes in this type of research, there are obviously a number of complementary variables worthy of consideration. Future research should examine a broader range of outcomes (e.g., Harris et al., 2003).

In spite of these limitations, the results of the current study suggest that incarceration has minimal impact on sexual or violent recidivism among sexual offenders. These results remained even when risk was statistically controlled. There was no evidence that the relationship between incarceration and recidivism is confounded or moderated by risk or that length of incarceration and recidivism are non-linearly associated. Sentencing sex offenders to terms of incarceration does not appear to deter sexual recidivism in the long-run. Given that rates of officially detected sexual recidivism are relatively low (Harris & Hanson, 2004), incarceration for the purpose of incapacitation is most justifiable for high risk sex offenders.

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