

Running head: DENIAL PREDICTS RECIDIVISM

Denial Predicts Recidivism for Some Sexual Offenders

Kevin L. Nunes

Correctional Service Canada

R. Karl Hanson

Ministry of Public Safety and Emergency Preparedness Canada

Philip Firestone and Heather M. Moulden

University of Ottawa

David M. Greenberg

University of New South Wales

John M. Bradford

University of Ottawa and Royal Ottawa Hospital

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Abstract

This study examined whether there were variables that moderated the relationship between denial and recidivism among adult male sexual offenders. The first study ($N = 489$) found that the relationship with sexual recidivism was moderated by risk (as measured by the Rapid Risk Assessment for Sexual Offense Recidivism) but not by psychopathy (as measured by the Psychopathy Checklist – Revised). Contrary to expectations, denial was associated with increased sexual recidivism among the low-risk offenders and with decreased recidivism among the high-risk offenders. Post hoc analyses suggested that the risk item most responsible for the interaction was “relationship to victims”. For incest offenders, denial was associated with increased sexual recidivism, but denial was not associated with increased recidivism for offenders with unrelated victims. These interactions were substantially replicated in two independent samples ($N = 490$ and $N = 73$). The results suggest that denial merits further consideration for researchers as well as those involved in applied risk assessment of sexual offenders.

Keywords: denial, risk assessment, sex offenders, recidivism

Denial Predicts Recidivism for Some Sexual Offenders

Even after being convicted of sexual offenses, many offenders deny their guilt (Barbaree, 1991; Marshall, 1994). Some researchers have speculated that such denial is associated with sexual recidivism (Barbaree, 1991; Lund, 2000; Schneider & Wright, 2001; Ward, Hudson, & Marshall, 1995). Despite the intuitive appeal of this hypothesis, the available evidence does not generally support a link between denial and recidivism. Consistent with their earlier meta-analytic review of predictors of recidivism among sexual offenders (Hanson & Bussière, 1998), Hanson and Morton-Bourgon (2004, 2005) found that denial was not significantly associated with sexual recidivism (average $d = 0.02$, 95% confidence interval = -0.15 to 0.19; 9 studies) or violent (including sexual) recidivism (average $d = 0.13$, 95% confidence interval = -0.03 to 0.29; 5 studies). However, for any type of recidivism a significant relationship was found, with deniers being more likely to generally recidivate (average $d = 0.12$, 95% confidence interval = 0.02 to 0.22; 7 studies). Statistical significance aside, all three effect sizes were extremely small and do not suggest an important link between denial and recidivism in sexual offenders (by convention, d of 0.20 is considered a small effect size; Cohen, 1992).

Lund (2000) speculated that a relationship between denial and recidivism may have been masked by potential moderator variables not examined in the research reviewed by Hanson and Bussière (1998). Given that sexual offenders may deny their offenses for different reasons, it is possible that the nature of the relationship between denial and recidivism may differ depending on the offender. For example, denial may be related to recidivism for psychopathic sexual offenders but not for non-psychopathic sexual offenders. For psychopaths, denial may reflect hostility, pathological lying, and

manipulation (Hare, 1991), whereas for the non-psychopaths, it may be motivated by guilt and embarrassment (Hanson & Morton-Bourgon, 2004, 2005; Rogers & Dickey, 1991; Sewell & Salekin, 1997; Ward, Hudson, & Marshall, 1995).

Similarly, denial may interact with assessed risk (as measured by a recidivism risk assessment instrument) in predicting recidivism. Lund (2000) speculated that denial might be associated with increased sexual recidivism among low-risk offenders but not among high-risk offenders. Lund reasoned that denial could influence sexual recidivism when other risk factors are absent, as would be the case with low-risk offenders. With high-risk offenders, however, the influence of denial could be eclipsed by the presence of more salient risk factors. Consequently, the presence or absence of denial among high-risk offenders would not be related to sexual recidivism.

In contrast to Lund's hypothesis, we expected denial to be positively associated with sexual recidivism among high-risk sexual offenders but unrelated to recidivism among low-risk offenders. Denial might limit offenders' opportunity to receive treatment and, if treatment were provided, may limit the benefits of treatment (see Statement 28, Association for the Treatment of Sexual Abusers, 2005). Low-risk offenders may be relatively unlikely to recidivate whether or not they receive treatment (or benefit from treatment), whereas recidivism may be more substantially reduced by treatment among high-risk offenders (i.e., risk principle; Andrews & Bonta, 2003).

The purpose of the current research was to examine the extent to which the relationship between denial and recidivism was moderated by psychopathy and risk. In Study 1, we examined whether deniers differed from admitters in terms of psychopathy, assessed risk, and recidivism. Next, we investigated the possibility that psychopathy and

assessed risk moderate the relationship between denial and recidivism. Given that the results of Study 1 were surprising (contrary to our hypothesis), Study 2 examined the extent to which the same patterns were observed in two additional samples. The overall findings are summarized as a meta-analysis of the three samples (for more information on meta-analysis, see Hanson & Broom, 2005).

Study 1

Method

Participants

All participants were assessed at the Royal Ottawa Hospital, Sexual Behaviours Clinic, between 1983 and 1995. Denial and recidivism data were available for 489 male offenders convicted of a hands-on sexual offense. Mean age at time of assessment was 38.6 years ($SD = 12.1$) and ranged from 18 to 78. The total sample consisted of 244 incest offenders, 179 extrafamilial child molesters, and 66 rapists. The majority of the participants were assessed pre-trial (55.7%) or pre-sentencing (23.4%). All participants signed a consent form at the time of assessment permitting use of their data for research, which was conducted in compliance with the internal review boards of the University of Ottawa and the Royal Ottawa Hospital. This sample has been previously examined in a number of published studies (e.g., Firestone, Nunes, Moulden, Broom & Bradford, 2005; Nunes, Firestone, Bradford, Greenberg, & Broom, 2002; Nunes, Firestone, Wexler, Jensen, & Bradford, in press) but the relationship between denial and recidivism was not addressed in these studies.

Measures

Rapid Risk Assessment for Sexual Offense Recidivism (RRASOR). The Rapid Risk Assessment for Sexual Offense Recidivism (RRASOR; Hanson, 1997) was scored for the current study 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. For the *prior sex offenses* item, 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. 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 guidelines outlined in Hanson (1997). There were, however, some deviations from the guidelines. In the database, a distinction had not been made between formal charges that did and did not result in conviction. Prior sexual offenses, therefore, were scored using only the weighting for charges. Victim gender and relationship to victim were coded from information pertaining only to the index offense. Offenders who had exclusively victimized their biological children, step-children, adopted children, nieces, nephews, cousins, grandchildren, or siblings in their index offences were coded as having *only related victims*. Due to these deviations from the scoring procedure, the instrument would be most accurately described as a *modified RRASOR (RRASOR-M)*. Scores were computed only when no items were missing. 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.

Our modifications of the RRASOR did not appear to detract from its overall predictive validity (Nunes et al., in press), but it would be expected to underestimate the risk of some offenders with prior offences. Given that 77% of the current sample had no prior sex charges or convictions, however, the impact of this underestimation of risk would be expected to be small.

Psychopathy Checklist-Revised (PCL-R). Psychopathy was assessed with the Psychopathy Checklist-Revised (PCL-R; Hare, 1991), which consists of 20 clinical rating scales designed to assess behaviors and personality characteristics considered fundamental to psychopathy (Hare, 1991). PCL-R scores can range from 0 to 40, with higher scores reflecting the presence of more psychopathic characteristics. In their meta-analysis, Hanson and Morton-Bourgon (2004) found a small association between the PCL-R and sexual recidivism (mean $d = .29$) and a medium association with violent (including sexual) recidivism (mean $d = .58$). Previous studies have found good inter-rater reliability and internal consistency (Hare, 1991; Hare et al., 1990).

In the current database, the PCL-R was completed from descriptive material contained in institutional files by two research assistants. Valid PCL-R ratings can be made on the basis of high quality archival information (Harris, Rice, & Quinsey, 1994; Quinsey, Rice, & Harris, 1995). In a random sample of 100 clinic files independently rated by each coder, inter-rater reliability was good ($r = .88$).

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. Offenders who denied committing all of their index sexual offenses were labeled *deniers* and those who admitted to any of their index sexual offenses were labeled *admitters*.

Criminal history and recidivism. Criminal history and recidivism information was gathered from the Canadian Police Information Centre (CPIC) at the Ottawa Police Station, a national database of criminal arrests and convictions from the Royal Canadian Mounted Police. Recidivism was defined as a new offense after the index conviction or, if the index offense resulted in a period of incarceration, as a new offense after release to the community. Sexual recidivism was defined as any new charge or conviction for a sexual offense. Violent recidivism was defined as any new non-sexually violent or sexual offense. The categories are not mutually exclusive.

Follow-up time and opportunity to reoffend began at the latest of three possible dates pertaining to the index offense: 1) date of conviction, 2) date of assessment, or 3) date of release if incarcerated. Follow-up time ended at the study end date (i.e., date of CPIC reports), whereas opportunity to reoffend ended at the earliest of two possible dates: 1) date of first recidivism or 2) study end date if no recidivism occurred.

Results

The overall rates of recidivism were 14.9% (73/489) for sexual recidivism and 24.5% (120/489) for violent (including sexual) recidivism. Sexual and violent recidivism

were strongly intercorrelated, $r(489) = .74$. The average follow-up period was 11.1 years ($SD = 3.5$) and mean period of opportunity to recidivate was 8.2 years ($SD = 4.8$).

As shown in Table I, deniers did not differ significantly from admitters on psychopathy, risk, or recidivism. To examine the magnitude of the differences between admitters and deniers, Cohen's d s were calculated, which ranged from 0.02 to 0.20. By convention, d s of 0.20, 0.50, and 0.80 are respectively considered small, medium, and large effect sizes (Cohen, 1992). Given that the 95% confidence intervals included zero, none of the d values were statistically significant ($p < .05$).

Sequential logistic regression analyses were conducted to address the possibility that the relationship between denial and recidivism was moderated by psychopathy and risk. For the denial variable, denying was coded as 1 and admitting as 0. Similarly, recidivism was coded as 1 and non-recidivism as 0. The results are reported in terms of odds ratios. The odds ratio can be interpreted as the increase or decrease in the predicted odds of recidivism that corresponds to an increase of one point on the predictor or, in the case of a dichotomous predictor (e.g., denial), as the odds of recidivism in one group compared to the other (e.g., denier vs. admitter). An odds ratio of 1.00 would reflect no relationship between the predictor and the outcome. By convention, when predictors are dichotomous, odds ratios of 1.4 (and the reciprocal, 0.71, if the relationship is in the opposite direction) are small, 2.3 (0.43) are moderate, and 3.7 (0.27) are large (using the Cox approximation to d , equation 18 from Sánchez-Meca, Chacón-Moscoso & Marín-Martínez, 2003).

As can be seen in Table II, the PCL-R and RRASOR-M both independently contributed to the prediction of sexual recidivism in Block 1. Denial was added in Block

2 and did not make a significant contribution. In the third block, the psychopathy by denial interaction term was entered and was not significant. Finally, in the fourth block, the risk by denial interaction term was entered. Interestingly, this interaction term added significantly to the prediction of sexual recidivism. In the low-risk group (RRASOR-M equal to or less than the median of 1), 15.5% (13/84) of the deniers sexually recidivated compared to 9.1% (22/241) of the admitters. In the high-risk group (RRASOR-M greater than the median of 1), 15.7% (8/51) of the deniers sexually recidivated compared to 26.6% (29/109) of the admitters.

When the same analyses were repeated with violent (including sexual) recidivism as the outcome variable, psychopathy and RRASOR-M were both independent predictors, but neither denial nor any of the interaction terms were significant (see Table III).

Given that the sexual recidivism interaction was contrary to our expectations, we conducted post hoc analyses examining the interaction of denial with each item of the RRASOR-M. The only items to interact significantly with denial were *victim gender* and *relationship to victim*. To identify possible redundancy in the interactions between denial and these RRASOR-M items, another logistic regression was performed. The predictors were denial, victim gender, relationship to victim, denial by victim gender, and denial by relationship to victim. When all predictors were entered, the only interaction to reach statistical significance was denial by relationship to victim (odds ratio = 0.20, 95% confidence interval = 0.06 to 0.67). For the incest offenders, the unadjusted rate of sexual recidivism was 16.7% (9/54) among the deniers compared to 6.3% (12/189) among the

admitters. In the unrelated-victim group, 14.8% (12/181) of the deniers sexually recidivated compared to 24.2% (39/161) of the admitters.

Interestingly, whether denial was assessed before or after a finding of guilt did not appear to affect the observed results. Specifically, the timing of the assessment (pre-trial vs. post-trial) did not interact with denial or with denial by risk in the logistic regression analyses. Thus, the timing of assessment does not appear to provide an alternate explanation for the findings observed. (These analyses are not reported here.)

Discussion

The overall magnitude of the relationship between denial and recidivism was small, non-significant, and consistent with the results of a recent meta-analytic review (Hanson & Morton-Bourgon, 2004, 2005). Although there was some overlap between the current sample and that of a previous study (Nunes, Serran, Firestone, Bradford, & Greenberg, 2000) included in Hanson and Morton-Bourgon's (2004, 2005) meta-analysis, our results are also consistent with earlier meta-analytic findings to which this sample did not contribute (Hanson & Bussière, 1998).

In the current sample, both psychopathy and RRASOR-M scores significantly contributed to the prediction of sexual recidivism and violent (including sexual) recidivism. Contrary to expectation, there were no significant interactions between psychopathy and denial. There was, however, a significant interaction between risk and denial, with denial increasing the sexual recidivism rates of low-risk offenders and decreasing the risk of high-risk offenders.

Given that this result was unexpected, the stability of this finding in other samples needed to be examined. Consequently, Study 2 examined the interaction between risk and

denial on sexual recidivism in two other samples. These analyses also considered the interaction with relationship to victim because the post hoc analyses in Study 1 suggested that it was the distinction between incest offenders and offenders with extrafamilial victims that was the characteristic most strongly influencing the interaction of RRASOR-M scores and denial.

Study 2

We attempted to replicate the results found above in two independent samples of sexual offenders.

Method

Samples

Washington State Special Sex Offender Sentencing Alternative (SSOSA). The first dataset (Song & Lieb, 1998; see also Berliner, Schram, Miller, & Milloy, 1995; Song & Lieb, 1995) was originally created to evaluate Washington State's Special Sex Offender Sentencing Alternative (SSOSA), which allows judges to sentence sex offenders to community treatment. To be eligible for SSOSA offenders must be facing their first felony conviction for sexual crimes other than first or second-degree rape. The sample consisted of 287 offenders who received SSOSA and 300 who were statutorily eligible for SSOSA but did not receive it. The majority of the sample was White (85%). Offenders were convicted between January, 1985 and June, 1986, with follow-up data collected in December, 1990. Analyses were restricted to the 490 cases with complete information concerning denial, sexual recidivism, and RRASOR-M scores.

In the SSOSA dataset, denial was assessed from file review with the following question: "Did offender admit conviction offense(s) prior to sentencing?" The potential

responses were a) full admission, b) partial admission, and c) denial. For the purposes of the current study, the full ($n = 195$) and partial admission ($n = 224$) groups were combined ($n = 419$) and compared with the denial group ($n = 71$).

RRASOR-M scores were computed from existing data. As with Study 1, victim information was based on the index offense. It did, however, include alleged victims that did not result in conviction. The coding of prior sex offenses was based on convictions only (7.8% had any prior sex convictions). Given that this was screened to be a low-risk sample, the average RRASOR-M score was 0.93 ($SD = 0.93$, median = 1, mode = 0; range of zero to 4). The sexual recidivism rate was 6.7% (33/490) based on arrests after an average follow-up period of 5 years.

Correctional Service Canada (CSC) – Pacific Region. The second dataset was created by Dempster (1998) from offenders that had been released from federal correctional institutions in British Columbia between January 1, 1988 and December 31, 1992. The samples included sexual recidivists, non-sexual violent recidivists and non-recidivists selected from a larger pool of sexual offenders who had been granted some form of conditional release (i.e., day parole, full parole, or mandatory supervision). As in Dempster and Hart (2002), we compared the 24 sexual recidivists to 7 non-sexually violent recidivists and 42 non-recidivists ($N = 73$).

Denial was assessed based on file review using the Sexual Violence Risk – 20 (SVR-20; Boer, Hart, Kropp, & Webster, 1997; Boer, Wilson, Gauthier, & Hart, 1997). On Item 17 (Extreme minimization or denial of sexual offenses), 24.7% of the 73 sexual offenders were rated “0 – no”, 26.0% were rated “1 = maybe”, and 49.3% were rated “2 – yes, the risk factor is present”. In the SVR-20 manual (Boer et al., 1997), extreme

minimization or denial is defined as denial of “many or all past acts of sexual violence;” denial of “personal responsibility for many or all past acts (e.g., blames the victim);” or denial of “serious consequences of many or all past acts (e.g., says victim did not suffer physical injuries)” (p. 75). For the current study, offenders were coded as *deniers* if they had a score of 2 and *admitters* if they had scores of 0 or 1. Complete RRASOR scores were coded from the offenders’ files (mean of 1.37; $SD = 0.47$). Sexual recidivism was defined as a new arrest or conviction for a sexual offense. Average time at risk was 4.8 years ($SD = 2.9$ years). Readers should be cautioned that the study intentionally oversampled recidivists, and the proportion of sexual recidivists (32.9%; 24/73) would not be representative of any particular population.

Statistical Analyses

The association between denial and recidivism was indexed using the odds ratio (with 0.5 added to the cells to adjust for small or empty cells, see Fleiss, 1994). Fixed effect meta-analytic statistics were used to create average effect sizes, and to test whether the differences observed across samples were more than would be expected by chance (Hanson & Broom, 2005). For the purpose of meta-analysis, the interaction effects were computed as ratios of odds ratios, or, equivalently, differences between log odds ratios (see Phillips, 2004). Specifically,

$$\text{Ln OR}_{\text{Interaction}} = \text{Ln OR}_1 - \text{Ln OR}_2 \quad , \quad (1)$$

where Ln OR_1 is the natural log of the odds ratio for the first group (e.g., high-risk offenders) and Ln OR_2 is the natural log of the odds ratio for the second group (e.g., low-risk offenders). The variance of the interaction was computed as the sum the variances for the two groups involved in the interaction:

$$V_{\text{Ln OR}_{\text{Interaction}}} = V_{\text{Ln OR}_1} + V_{\text{Ln OR}_2} \quad (2)$$

Given that meta-analyses of study-level interactions have been rarely reported, the validity of the above formulae were verified through consultation with an expert in medical statistics (P. Hannan, April 11, 2006).

Results

The interactions between risk and denial on sexual recidivism are presented in Table IV. For these tables, low risk was defined in the same way as in Study 1 using RRASOR scores of 0 and 1, and high risk was defined as RRASOR scores of 2 or more. In all three samples the low-risk offenders who denied their offences were more likely to sexually recidivate than low-risk offenders who admitted their offences. Although this pattern was not statistically significant in any single sample, the overall effect was statistically significant (odds ratio of 2.08, 95% confidence interval of 1.21 to 3.57) and consistent across samples ($Q = 0.40$, $df = 2$, $p = .82$). The high-risk offenders who denied their offences recidivated less than the high-risk offenders who admitted their offences, but the effect was not statistically significant in any of the samples nor in the meta-analysis (odds ratio of 0.61, 95% confidence interval of 0.31 to 1.21, $Q = 0.38$, $df = 2$, $p = .83$). The overall interaction between risk and denial on sexual recidivism was statistically significant and consistent across samples (interaction ratio of 0.30, 95% confidence interval of 0.12 to 0.73, $Q = 0.26$, $df = 2$, $p = .88$).

The interactions between relationship to victim and denial on sexual recidivism are presented in Table V. Offenders were considered to have unrelated victims if any of their victims were not family members (RRASOR item 4). Both close and extended family members were classified as related (see Static-99 definitions; Harris, Phenix, Hanson & Thornton, 2003). In all three samples, incest offenders were more likely to sexually recidivate if they denied their offences compared to incest offenders who admitted their offences. The odds ratios ranged from 2.16 to 2.96, and were statistically significant in the ROH sample (overall odds ratio of 2.74, 95% confidence interval of 1.36 to 5.49). The amount of variability across samples was no more than would be expected by chance ($Q = 0.09$, $df = 2$, $p = .96$).

Among the offenders with unrelated victims, there was no consistent relationship between denial and sexual recidivism. Deniers with unrelated victims were lower risk in the ROH sample, and slightly higher risk in the other two samples. For these offenders the effect of denial was not statistically significant in any of the samples or in the overall meta-analysis (odds ratio of 0.83, 95% confidence interval of 0.49 to 1.40, $Q = 2.77$, $df = 2$, $p = .25$).

The overall interaction between relationship to victims and denial on sexual recidivism was statistically significant (odds ratio of 0.30, 95% confidence interval of 0.12 to 0.71) and displayed no more variability across samples than would be expected by chance ($Q = 1.49$, $df = 2$, $p = .48$).

General Discussion

The purpose of the study was to examine whether there were variables that moderated the relationship between denial and recidivism. The first study found that the

relationship to recidivism was moderated by risk (as measured by the RRASOR-M) but not by psychopathy (PCL-R). Contrary to expectations, denial was associated with increased risk among the low-risk offenders and decreased risk among the high-risk offenders. Post hoc analyses suggested that the risk item most responsible for the interaction was *relationship to victims*. For incest offenders, denial was associated with increased recidivism, but denial was not associated with increased recidivism for offenders with unrelated victims. These interactions were replicated in two additional samples. Although the findings tended to be non-significant in any particular sample, the overall meta-analysis of the findings was statistically significant and consistent across samples. For the risk by denial interaction, the effect sizes in the independent samples were as large or larger than those found in Study 1. For the *relationship to victim* by denial interaction, the effect sizes in the independent samples were somewhat smaller than those found in Study 1, but the overall pattern of results was consistent.

The effects of denial with low-risk offenders and incest offenders were not large, resulting in absolute differences in observed recidivism rates of 5% to 17%. If reliable, however, they raise important theoretical and practical concerns for sexual offender risk assessment. Consistent with Lund's (2000) speculation, denial could be a real, but minor, risk factor. If few other factors are present, then it could be related to increased recidivism risk. It could lose relevance, however, when compared to the major risk factors of sexual deviance and general criminality found in high-risk offenders.

Another possible explanation for the results is that denial of incest offenders may "work". It is possible that incest offenders may be able to convince others of their innocence, thereby reducing the barriers to offending that would be expected from having

a known sexual offender in the family. For offenders with extrafamilial victims, however, denial may not have the same impact on sexual recidivism because maintaining or regaining trust in the family of the index victim(s) is not required for reoffending; they can simply move on to a new victim. Although this line of speculation seems plausible, we did not have the data on the victims and context of the recidivistic sexual offences that would be required to test this hypothesis. This would be an interesting direction for future research.

One potential threat to the internal validity of the current research is that the intrafamilial offenders would have victimized children, whereas the extrafamilial offenders could include child molesters and rapists. Given that victim age was confounded with relationship to victim, victim age could have accounted for the different results observed with intrafamilial and extrafamilial offenders. To address this possibility, the analyses reported above were conducted on the ROH and SSOSA samples with the rapists excluded (sample size was too small for these analyses in the CSC-Pacific dataset). The results of these analyses were virtually identical to those reported above. Thus, the presence or absence of adult victims does not appear to account for the differences observed between the incest and extrafamilial offenders.

Another possibility is that the interaction between risk and denial may be an artifact of the offenders' openness at the time of assessment. Admitters may be more forthcoming than deniers about risk-related aspects of their offending (e.g., victim-gender). This could create a systematic bias whereby RRASOR scores would be underestimated for deniers. For example, an admitter might be more likely than a denier to divulge that he has offended against boys even though his official information only

indicates female victims. If this were the case, RRASOR scores should be higher among admitters than deniers. Evidence from Study 1, however, does not support this alternate explanation. Admitters did not differ significantly on the RRASOR-M. Furthermore, the direction of this small non-significant effect was for deniers to have slightly *higher* RRASOR-M scores than admitters.

To the extent that incarceration for the index offense is related to the RRASOR and relationship to victim, the length of time between measurement of denial and the beginning of opportunity to reoffend may be an alternate explanation of the current results. For example, the relationship between denial and recidivism might be expected to be stronger for offenders who begin their time at risk immediately following the measurement of denial. It may be less likely that treatment or the passage of time has changed their denial stance before they have an opportunity to reoffend. In the ROH data, however, we have not found a relationship between incarceration and the RRASOR-M (Nunes et al., in press) nor did we find an interaction between incarceration and denial when incarceration was substituted for relationship to victim in the logistic regression (these analyses are not reported). Consequently, incarceration does not appear to be a confounding variable and it does not appear to be responsible for our findings.

Some limitations of the present study include not considering the potential impact of treatment, the unidimensional nature of our denial variable, and our modification of the RRASOR. We did not have access to data on participation in sex offender treatment and, therefore, were unable to examine it as a potential moderator of the relationship between denial and recidivism. Given that denial appears to decrease over the course of treatment (Barbaree, 1991; Marshall, Thornton, Marshall, Fernandez, & Mann, 2001), we

may have found different results had we considered participation in treatment. In terms of the nature of our denial variable, we used a dichotomous variable, whereas some researchers have conceptualized denial as a multidimensional construct (Schneider, & Wright, 2001). Some of these dimensions, however, appear to be justifications and excuses for sexual offending rather than denial that a sexual offense was committed. Although it seems reasonable to use such a broad definition of denial, we were more interested in focusing specifically on denial that a sexual offense had been committed.

In spite of these limitations, the current research makes a novel contribution by exploring the nature of the relationship between denial and recidivism among sexual offenders. The relationship between denial and recidivism is clearly of interest to clinicians working with sexual offenders but has been the subject of relatively little research. In contrast to the conclusions based only on main effects in previous research (Hanson & Morton-Bourgon, 2004, 2005), the current evidence clearly indicates that denial may be associated with increased sexual recidivism among certain groups of sex offenders, namely incest and other low-risk offenders. Future research should focus on explaining the observed interactions and examining other potential moderator variables.

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Author Note

Kevin Nunes, Programming Research Division, Research Branch, Correctional Service Canada; R. Karl Hanson, Corrections Research, Public Safety and Emergency Preparedness Canada; Heather Moulden, School of Psychology, University of Ottawa; Philip Firestone, School of Psychology and Department of Psychiatry, University of Ottawa; David Greenberg, School of Psychiatry, University of New South Wales; John Bradford, Department of Psychiatry, University of Ottawa; Sexual Behaviours Clinic, Royal Ottawa Hospital.

Kevin Nunes is now at the Department of Psychology, Carleton University.

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Correspondence concerning this article should be addressed to Kevin Nunes,
Department of Psychology, Carleton University, Loeb Building, 1125 Colonel By Drive,
Ottawa, Ontario, Canada, K1S 5B6. E-mail: Kevin_Nunes@carleton.ca.

Table I. *Comparison of Sexual Offenders who Admitted their Index Offenses to those who Denied their Index Offenses*

Variable	Admitter		Denier		<i>d</i>	95% <i>CI</i>	
	<i>n</i>	<i>M (SD) or %</i>	<i>n</i>	<i>M (SD) or %</i>		Lower	Upper
PCL-R	250	17.99 (7.70)	78	19.55 (8.06)	0.20	-0.06	0.45
RRASOR-M	350	1.11 (1.22)	135	1.34 (1.17)	0.19	-0.01	0.39
Recidivism							
Sexual	352	14.8%	137	15.3%	0.02	-0.18	0.21
Violent	352	23.6%	137	27.0%	0.08	-0.12	0.28

Table II. *Sequential Logistic Regression Predicting Sexual Recidivism*

Scale	<i>B</i>	<i>SE B</i>	Wald	Odds ratio	95% CI
Block 1					
PCL-R	0.07	0.02	12.31*	1.07	1.03-1.11
RRASOR-M	0.43	0.12	13.40*	1.54	1.22-1.95
Block 2					
PCL-R	0.07	0.02	12.41*	1.07	1.03-1.11
RRASOR-M	0.44	0.12	13.51*	1.55	1.23-1.96
Denial	-0.12	0.35	0.12	0.89	0.45-1.75
Block 3					
PCL-R	0.07	0.02	10.91*	1.08	1.03-1.12
RRASOR-M	0.44	0.12	13.51*	1.55	1.23-1.96
Denial	0.38	0.99	0.15	1.46	0.21-10.04
PCL-R by Denial	-0.02	0.04	0.28	0.98	0.90-1.06
Block 4					
PCL-R	0.08	0.02	10.78*	1.08	1.03-1.13
RRASOR-M	0.64	0.15	18.99*	1.90	1.42-2.53
Denial	1.44	1.06	1.83	4.20	0.53-33.61
PCL-R by Denial	-0.02	0.04	0.21	0.98	0.90-1.07
RRASOR-M by Denial	-0.70	0.28	6.40*	0.50	0.29-0.85

Note. $\chi^2(2, N = 326) = 28.25$ for Block 1 ($p < .05$). $\chi^2(1, N = 326) = 0.12$ for Block 2 ($p > .05$). $\chi^2(1, N = 326) = 0.28$ for Block 3 ($p > .05$). $\chi^2(1, N = 326) = 6.75$ for Block 4 ($p < .05$). *SE* = Standard Error. *CI* = Confidence Interval.

* $p < .05$.

Table III. *Sequential Logistic Regression Predicting Violent (including Sexual)*

<i>Recidivism</i>					
Scale	<i>B</i>	<i>SE B</i>	Wald	Odds ratio	95% CI
Block 1					
PCL-R	0.09	0.02	24.39*	1.09	1.05-1.13
RRASOR-M	0.36	0.11	11.12*	1.43	1.16-1.77
Block 2					
PCL-R	0.09	0.02	24.06*	1.09	1.05-1.13
RRASOR-M	0.36	0.11	10.72*	1.43	1.15-1.77
Denial	0.10	0.30	0.12	1.11	0.62-1.99
Block 3					
PCL-R	0.08	0.02	16.32*	1.08	1.04-1.13
RRASOR-M	0.36	0.11	10.77*	1.43	1.16-1.77
Denial	-0.31	0.91	0.12	0.73	0.12-4.36
PCL-R by Denial	0.02	0.04	0.24	1.02	0.94-1.11
Block 4					
PCL-R	0.08	0.02	16.24*	1.08	1.04-1.13
RRASOR-M	0.41	0.13	10.30*	1.51	1.17-1.94
Denial	0.00	0.98	0.00	1.00	0.15-6.78
PCL-R by Denial	0.02	0.04	0.22	1.02	0.94-1.10
RRASOR-M by Denial	-0.20	0.24	0.68	0.82	0.51-1.32

Note. $\chi^2(2, N = 326) = 40.48$ for Block 1 ($p < .05$). $\chi^2(1, N = 326) = 0.12$ for Block 2 ($p > .05$). $\chi^2(1, N = 326) = 0.24$ for Block 3 ($p > .05$). $\chi^2(1, N = 326) = 0.67$ for Block 4 ($p > .05$). *SE* = Standard Error. *CI* = Confidence Interval.

* $p < .05$.

Table IV. *Risk by Denial Effect Sizes*

Sample	Group	Sexual recidivism		Interaction
		Low risk	High risk	
ROH	Admit	9.1% (22/241)	26.6% (29/109)	
	Deny	15.5% (13/84)	15.7% (8/51)	
	<i>OR</i> (95% <i>CI</i>)	1.84 (0.89, 3.81)	0.53 (0.23, 1.24)	0.29 (0.09, 0.88)
SSOSA	Admit	5.7% (18/314)	7.6% (8/105)	
	Deny	11.3% (6/53)	5.6% (1/18)	
	<i>OR</i> (95% <i>CI</i>)	2.19 (0.85, 5.64)	0.98 (0.16, 6.00)	0.45 (0.06, 3.45)
CSC Pacific	Admit	8.7% (2/23)	64.3% (9/14)	
	Deny	26.1% (6/23)	53.8% (7/13)	
	<i>OR</i> (95% <i>CI</i>)	3.19 (0.65, 15.65)	0.67 (0.15, 2.95)	0.21 (0.02, 1.84)
Meta-analysis	<i>OR</i> (95% <i>CI</i>)	2.08 (1.21, 3.57)	0.61 (0.31, 1.21)	0.30 (0.12, 0.73)
	<i>Q</i> (<i>p</i>)	0.40 (.82)	0.38 (.83)	0.26 (.88)

Note. ROH = Royal Ottawa Hospital Sexual Behaviour Clinic; SOSSA = Washington

State Special Sex Offender Sentencing Alternative; CSC Pacific = Correctional Service

Canada – Pacific Region; *OR* = odds ratio; *CI* = confidence interval.

Table V. *Relationship to Victim by Denial Effect Sizes*

Sample	Group	Sexual recidivism		Interaction
		Related victims	Unrelated victims	
ROH	Admit	6.3% (12/189)	24.2% (39/161)	
	Deny	16.7% (9/54)	14.8% (12/81)	
	<i>OR (95% CI)</i>	2.96 (1.20, 7.32)	0.56 (0.28, 1.12)	0.19 (0.06, 0.59)
SOSSA	Admit	4.2% (9/213)	8.3% (17/206)	
	Deny	9.4% (3/32)	10.3% (4/39)	
	<i>OR (95% CI)</i>	2.55 (0.71, 9.23)	1.37 (0.46, 4.11)	0.54 (0.10, 2.91)
CSC Pacific	Admit	7.7% (1/13)	41.7% (10/24)	
	Deny	18.8% (3/16)	50.0% (10/20)	
	<i>OR (95% CI)</i>	2.16 (0.27, 16.98)	1.38 (0.43, 4.44)	0.64 (0.06, 6.83)
Total	<i>OR (95% CI)</i>	2.74 (1.36, 5.49)	0.83 (0.49, 1.40)	0.30 (0.12, 0.71)
	<i>Q (p)</i>	0.09 (.96)	2.77 (.25)	1.49 (.48)

Note. ROH = Royal Ottawa Hospital Sexual Behaviour Clinic; SOSSA = Washington State Special Sex Offender Sentencing Alternative; CSC Pacific = Correctional Service Canada – Pacific Region; *OR* = odds ratio; *CI* = confidence interval.