

Factors associated with recidivism among intrafamilial child molesters

Drew A. Kingston,^{1*} Philip Firestone,^{1,2} Audrey Wexler³ & John M. Bradford²

¹School of Psychology, University of Ottawa, Canada, ²Department of Psychiatry, University of Ottawa, Canada, and ³British Columbia Children's Hospital, Canada

Abstract *This study examined factors that could potentially differentiate between sexual, violent and criminal recidivist and non-recidivist incest offenders (n = 295). The objective of the study was to extend a previous study conducted on incest offenders by increasing the sample size, adding seven years to the follow-up and attempting to address some of the limitations identified in the previous study. Results indicated, that by the end of the 19th year (mean = 10.78), 9.8%, 20% and 27.5% of incest offenders were charged or convicted of a sexual, violent or criminal offence, respectively. This study identified a number of predictor variables demonstrating either moderate or strong associations with recidivism (i.e. Cohen's effect size), some of which are changeable and, thus, should be considered important treatment targets for this type of offender. Specifically, sexual recidivists had higher psychopathy scores than non-recidivists. Violent recidivists were younger, demonstrated more problems with alcoholism, were more hostile, had higher psychopathy scores and had more previous criminal charges and/or convictions than non-recidivists. Finally, criminal recidivists were younger, demonstrated more problems with alcoholism, were more hostile, had higher psychopathy scores and had more previous violent and criminal charges and/or convictions than non-recidivists.*

Keywords *Incest offender; child molesters; sex offender; recidivism; predictors*

Introduction

Sexual assault during childhood has the potential to cause serious and lasting consequences for victims. Given the costs of sexual offending to both victims and families, an understanding of the characteristics of the offender is crucial. Child molesters are not a homogeneous group (Marshall, Anderson & Fernandez, 1999), and contemporary research has indicated that various offender and victim characteristics differentiate an offender's risk to re-offend (Hanson & Morton-Bourgon, 2005; Hanson, Steffy & Gauthier, 1993). Knowledge of such characteristics and their relationship to recidivism contributes to appropriate management strategies and assists in the adequate identification of risk to re-offend (Roberts, Doren & Thornton, 2002).

*Corresponding author: Drew A. Kingston, School of Psychology, 120 University Private, Ottawa, Ontario, K1N 6N5, Canada. Tel: (613) 562 5800 4457; Fax: (613) 562 5253; E-mail: dking062@uottawa.ca

Various studies examining predictors of recidivism in sexual offenders (Firestone et al., 1999; Firestone, Kingston, Wexler & Bradford, 2006; Hanson, Steffy & Gauthier, 1993; Quinsey, Rice & Harris, 1995) and subsequently, the accumulation of these studies (i.e. meta-analyses; e.g. Hanson & Bussière, 1998; Hanson & Morton-Bourgon, 2005) have directly informed risk assessment. For example, studies have shown that variables such as offender age, prior offence history, victim characteristics and antisocial personality are related to sexual recidivism and discriminate between recidivists and non-recidivists. Consequently, these predictor variables have been utilized to develop empirically informed assessment measures such as the Rapid Risk Assessment for Sexual Offense Recidivism (RRASOR; Hanson, 1997), the Static 99 (Hanson & Thornton, 1999) and the Minnesota Sex Offender Screening Tool—Revised (MnSOST-R; Epperson, Kaul & Hesselton, 1998). Empirically informed assessment instruments are used commonly for both the identification of risk and in determining appropriate treatment and management strategies (Yates & Kingston, 2007).

Results from the most recent and comprehensive meta-analysis of sexual offence recidivism (Hanson & Morton-Bourgon, 2005) indicated that deviant sexual interest, sexual preoccupations and general self-regulation problems were associated with sexual recidivism. An antisocial orientation was correlated most strongly with violent (including sexual) and general recidivism. Factors such as denial of the sexual offence and low motivation for treatment were unrelated to sexual recidivism.

The Hanson and Morton-Bourgon meta-analysis was quite extensive in its examination of 82 studies, representing nearly 30,000 sexual offenders. Nevertheless, the analysis included only seven studies examining pure groups of child molesters and fewer pertaining to offenders whose only sexual offences were intrafamilial (i.e. incest offenders). As such, recidivism studies regarding intrafamilial child molesters are undoubtedly lacking.

In one of the few studies examining a homogeneous group of incest offenders, Firestone et al. (1999) used a standard assessment battery and conducted a 12-year follow up study, with an average time-at-risk of 6.7 years. Results indicated that the percentage of men who recidivated with a sexual, violent or criminal offence was 6.4%, 12.4% and 26.7% respectively. Moreover, univariate analyses revealed that the variables predictive of sexual recidivism were problems with alcoholism ($d = 1.15$) and high scores on the psychopathy checklist revised (PCL-R; Hare, 1991; $d = 0.56$) and, as such, appeared to be general criminogenic needs. Violent recidivists had more problems with alcoholism ($d = 0.73$) and had higher scores on the PCL-R ($d = 0.49$) in addition to more previous violent offences ($d = 0.39$) than non-recidivists. Finally, criminal (i.e. non-violent) recidivists were older ($d = 65$), demonstrated more hostility ($d = 61$), had more problems with alcoholism ($d = 65$) and scored higher on the PCL-R ($d = 94$), than non-recidivists.

The Firestone et al. (1999) study was notable for the significantly long follow-up period and the large number of predictors examined. Nevertheless, one limitation the authors noted was that the analyses ended upon the first incident of recidivism. In other words, if an offender had any other conviction after the first re-offence, this was not included in the analysis of recidivism. This probably resulted in an underestimation of the actual recidivism rate and may have inadequately identified important predictor variables.

This present study utilizes the same database used by Firestone et al. (1999), but includes an additional 44 incest offenders, extends the follow-up by seven years and records every offence during the follow-up period. For example, in the original study an offender who recidivated with a violent offence was classified as a violent recidivist, even if he had subsequently committed a sexual offence. The present study coded this type of offender as both a sexual and violent recidivist.

Method

Participants

Participants were adult males ($n = 295$) who had been convicted of a sexual offence against a family member who was under the age of 16 years at the time of the offence. Participants included stepfathers, surrogate grandfathers, uncles and cousins, as well as biological fathers and grandfathers. The average age of the sample was 41 years [range: 18–78; standard deviation (SD) = 11.44]. The average education level was 9.9 years (SD = 2.8 years). The participants were assessed at a university teaching hospital in a large Canadian city between 1982 and 1992. If police records indicated that a participant had ever offended against an adult or against an unrelated victim, he was excluded from the analysis.

Procedure

It should be acknowledged that this study was not theoretically driven. It was based on assessments conducted at a sexual behaviours clinic in a large psychiatric hospital. The assessment battery for sexual offenders was introduced at the clinic in 1982 for both clinical and research purposes, and is similar to other batteries used in other sexual behaviour assessment centres. The data included demographic information, offence characteristics, psychological measures and phallometric assessment. 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 board of the hospital.

Measures

Michigan Alcoholism Screening Test. The Michigan Alcoholism Screening Test (MAST) is a 24-item self-report inventory used to identify behaviours that are suggestive of alcohol abuse (Seltzer, 1971; Seltzer, Vinokur & van Rooijen, 1975). The degree of problems associated with alcoholism is reflected in the total number of “yes” responses. Scores of 5 or 6 are indicative of alcohol problems and scores of 7 or more are suggestive of alcohol abuse (Allnutt, Bradford, Greenberg & Curry, 1996). The MAST has been examined in numerous studies pertaining to sexual offenders (e.g. Allnutt et al., 1996; Firestone, Bradford, Greenberg, Larose & Curry, 1998a; Firestone et al., 1998b; Hucker, Langevin & Bain, 1988; Rada, 1975; Rada, Laws & Kellner, 1976). The internal consistency is good, with an overall alpha coefficient of 0.87, and is relatively unaffected by age of respondent or socially desirable responding (Magruder-Habib, Durand & Frey, 1991; Magruder-Habib, Stevens & Alling, 1993).

Derogatis Sexual Functioning Inventory. The Derogatis Sexual Functioning Inventory (DSFI) contains 10 subscales pertaining to dimensions of sexual functioning (Derogatis & Melisaratos, 1979). The Sexual Functioning Index (SFI) is a global measure derived by summing the 10 subtest scores and provides an overall measure of an individual’s level of sexual functioning, where higher scores represent healthy sexual functioning (Derogatis, 1980). The DSFI has good validity and good internal consistency with alpha coefficients ranging from 0.56 to 0.97 for the 10 subscales, and test–retest reliability ranging from 0.42 to 0.96 for the 10 subscales (Derogatis & Melisaratos, 1979). Although the DSFI has been used with large non-forensic samples, its use with sexual offenders is limited (see Firestone et al., 1998a, 1998b; Hanson, Cox & Woszcyna, 1991).

Buss–Durkee Hostility Inventory. The Buss–Durkee Hostility Inventory (BDHI; Buss & Durkee, 1957) contains 75 true–false statements that provide a measure of general hostility, where higher scores are suggestive of higher levels of hostility. A total score of 38 or greater is consistent with high levels of hostility. The BDHI consists of seven subscales: assault, indirect aggression, irritability, negativism, verbal aggression, resentment and suspicion. BDHI scores are typically higher in rapists when compared to non-offending controls (Firestone et al., 1998a; Rada, Laws & Kellner, 1976), and in child molesters such scores have been associated significantly with recidivism (Firestone, Nunes, Moulden, Broom & Bradford, 2005).

Psychopathy Checklist—Revised. The Psychopathy Checklist-Revised (PCL-R; Hare, 1991) consists of 20 items designed to assess behaviours and personality characteristics considered fundamental to psychopathy. PCL-R scores can range from 0 to 40, with higher scores reflecting the presence of more psychopathic characteristics. Scores of 30 and above are generally considered indicative of psychopathy. Previous studies have found good inter-rater reliability and internal consistency (Hare, 1991; Hare, Forth & Strachan, 1992; Hare et al., 1990). The PCL-R is used widely with sexual offenders (Firestone, Bradford, Greenberg & Serran, 2000; Serin & Amos, 1995; Serin, Malcolm, Khanna & Barbaree, 1994), and although an inconsistent predictor of sexual recidivism, it has shown to be an important predictor of violent recidivism (e.g. Quinsey, Lalumière, Rice & Harris, 1995). For example, in their meta-analysis, Hanson and Morton-Bourgon found a small association between the PCL-R and sexual recidivism (mean $d = 0.29$) and a medium association with violent (including sexual) recidivism (mean $d = 0.58$).

In the present investigation, two research assistants completed PCL-R assessments retrospectively from descriptive material contained in medical files. A random sample of 100 clinic files was rated independently by each researcher, which resulted in satisfactory inter-rater reliability ($r = 0.88$). It should be noted that valid PCL-R ratings can be achieved through quality archival information (Harris, Rice & Quinsey, 1994; Wong, 1988).

Cognition Scale

The Cognition Scale, which was designed for use with adult child molesters, is composed of 29 statements reflecting values regarding sexual contact with children. Factor analyses have indicated that the scale is one-dimensional (Abel et al., 1989; Hanson, Gizzarelli & Scott, 1994). Scores can range from 1 to 5, where lower scores are indicative of a greater degree of cognitive distortions regarding sexual activity with children. This scale has demonstrated an ability to discriminate between child molesters and non-offending controls (Hanson et al., 1994; Stermac & Segal, 1989). Additionally, the measure has shown good internal consistency and test–retest reliability (Abel et al., 1989; Hanson et al., 1994).

Measurement of sexual arousal

Changes in penile circumference in response to audio stimuli were measured by means of an Indium–Gallium strain gauge and processed on an IBM-compatible computer for storage and printout. Given that this methodology utilized an audio presentation of stimuli, comparisons between the following results and findings published with video stimuli should be interpreted with caution.

Stimuli presentation. The order of the stimuli presentation, held constant for all participants, was computer-controlled. Participants were presented with one or more of three series of

audiotapes. The audiotape battery consisted of vignettes of approximately two-minute duration describing sexual activity between two people varying with respect to age, sex and degree of consent, coercion and violence portrayed (Abel, Blanchard & Barlow, 1981). Each participant was presented with a full set containing one vignette from each category following instructions to allow normal arousal to occur. The female child series consisted of descriptions of sexual activity with a female partner/victim for eight categories. The male child series consisted of eight corresponding vignettes involving a male partner/victim but also included one scenario involving an adult female partner. For each of the female child and male child series, two equivalent scenarios for each category were included. Categories were as follows: (a) child initiates; (b) child mutual; (c) non-physical coercion of child; (d) physical coercion of child; (e) violent sex with child; (f) non-sexual assault of child; (g) consenting sex with female or male adult; and (h) sex with female child relative (incest).

Scoring. The Paedophile Index was calculated by dividing the participant's highest response to a child initiates or child mutual stimulus by the highest response to an adult-consenting stimulus.

Criminal offence histories

Offence information was gathered from the Canadian Police Information Centre (CPIC). This information was based on a national database of criminal arrests and convictions, including Interpol reports from the Royal Canadian Mounted Police. CPIC records contain the individual's criminal history and include details such as the dates of charges and convictions, the nature of the offences, the disposition of the incident (e.g. convicted, charges withdrawn, etc.) and the sentence/penalty imposed in cases of convictions.

Offence characteristics

Offence characteristics included a measure of the violence of the sexual offence and the intrusiveness of the sexual act. The level of violence and the intrusiveness of the sexual act were rated by the interviewing psychiatrist. The level of violence used a 10-point scale indicative of increasing levels of force and violence. The specific descriptors along with their corresponding scores were as follows: no force or violence (0); threat of assault with no weapon (1); threat of assault with a weapon (2); minor injury with no weapon (3); minor injury with weapon (4); severe beating with no weapon (5); severe beating with weapon (6); potential homicide (7); homicide (8); and homicide with post-death mutilation (9). The intrusiveness of the sexual act was scored based on a 6-point scale, with higher scores representing increasing levels of sexual intrusion. The specific descriptors along with their corresponding scores were as follows: no sexual intrusiveness (0); verbal threat (1); attempt (2); touching (3); penetration (4); and sexual assault with excessive violence (5).

Recidivism analyses

Recidivism data were organized in a cumulative hierarchical manner and were gathered from the CPIC report. Recidivism was defined as a new charge or conviction after the index conviction. Specifically, sexual recidivism was defined as any charge or conviction for a sexual offence. Violent (including sexual) recidivism was defined as any charge or conviction of a violent (e.g. assault, assault causing bodily harm) and/or sexual offence. Finally, criminal recidivism was any charge or conviction noted in the CPIC report. This cumulative hierarchy

in which each additional category includes the previous category is utilized to account for plea-bargaining and to permit comparisons across other recidivism studies (see Firestone et al., 1999, 2006; Kingston, Fedoroff, Firestone, Curry & Bradford, in press; Rice, Quinsey & Harris, 1991).

Importantly, recidivism was calculated as a function of all new offences, regardless of when these offences occurred during the follow-up period, as described earlier. It has been suggested that this method be the standard in recidivism research (Firestone et al., 2006). Data were obtained from the recently updated database (see Wexler, 2005). It should be stressed that this study considers recidivists as those men who have been charged or convicted of re-offending, and thus is an under-representation of all re-offending.

Statistical analyses

Prior to performing statistical tests, the data were screened to ensure that assumptions underlying the tests were not violated. Outlying cases were detected using a criterion of plus or minus 3.29 standard deviations from the mean or by visual inspection of normal probability plots (Tabachnick & Fidell, 2001). Values of outlying cases were adjusted upwards or downwards according to the direction of the problem so that these scores were replaced by the next most extreme value (Howell, 2002). A Bonferroni correction was applied to the data to account for the multiple comparisons. As such, the criterion for significance was set at <0.003 . The reasons for missing data included a lack of information (file or self-report), technological problems (i.e. when assessing deviant sexual arousal) or refusal to participate in some aspects of the assessment.

Given that the most important indicator of predictor variables is the magnitude of the relationship to recidivism (Hanson & Morton-Bourgon, 2005), Cohen's *d* (Cohen, 1988) was used when one variable was dichotomous and one was continuous, and an odds ratio was computed when both variables were dichotomous (i.e. victim gender; see Hanson & Broom, 2005). Regarding *d*, it is suggested that effect sizes of 0.20 are small, 0.50 are medium and 0.80 are large (Cohen, 1988, 1992). For clarification purposes, odds ratio interpretations will be reported in the text where applicable. Cox regression analyses were conducted to examine the unique contribution of predictor variables on sexual, violent and criminal recidivism, as this method controls for variations in time-at-risk for recidivism.

Results

The follow-up period ranged from one to 19 years with an average time-at-risk of 10.78 years ($SD = 4.08$). The total recidivism rates at the end of the follow-up period were 9.8%, 20% and 27.5% for sexual, violent and criminal recidivism, respectively.

Table I shows the mean scores and comparisons across the predictor variables for the sexual recidivists and the non-recidivists. Of the 15 variables examined, 1 was statistically significant according to the cut-off for statistical significance (< 0.003). Specifically, sexual recidivists were more psychopathic, as measured by the PCL-R ($d = 0.82$), compared to non-recidivists. Interestingly, subsequent analyses on the PCL-R factor scores indicated that factor 1 ($n = 200$) was associated with sexual recidivism ($r = 0.14$, $p < 0.05$) but not violent recidivism [$r = 0.09$, $p =$ not significant (ns)], whereas factor 2 ($n = 131$) scores were associated with sexual recidivism ($r = 0.28$, $p < 0.01$), although they demonstrated the highest relationship to violent recidivism ($r = 0.34$, $p < 0.001$). While they did not meet statistical significance, moderate associations were discovered between sexual recidivism and age

Table 1. Demographic, offence, psychological, and criminal offence history data for sexual recidivist and non-recidivist incest offenders.

Variable	Sexual recidivism									
	Non-recidivist					Recidivist				
	M/%	SD	n	M/%	SD	n	F or χ^2	df	p	d or OR
Age (in years)	41.55	11.25	266	35.66	11.96	29	7.10	293	0.008	-0.52
Education (in years)	9.94	2.84	236	9.89	2.87	27	0.01	261	0.929	-0.02
Intelligence quotient	90.34	14.20	87	82.69	13.49	13	3.33	98	0.071	-0.55
Victim gender							0.03	1	0.864	0.92
Any male victim	14.4		27	13		3				
Female victim(s) only	85.6		161	87		20				
Violence of offence	0.33	1.02	236	1.00	1.83	26	8.25	260	0.004	0.60
Sexual intrusiveness	3.45	0.93	188	3.62	0.67	21	0.64	207	0.426	0.19
MAST	8.87	12.72	195	16.47	17.13	17	5.26	210	0.023	0.58
BDHI	25.53	11.74	252	31.56	14.14	25	5.77	275	0.017	0.51
DSFI	30.00	11.25	250	29.02	9.57	25	0.177	273	0.675	-0.09
PCL-R	17.40	6.53	177	22.71	6.49	23	13.44	198	0.000	0.82
ABEL	4.55	0.43	215	4.37	0.45	16	2.58	229	0.110	-0.42
Paedophile Index	0.82	0.89	187	1.10	1.25	22	1.81	207	0.180	0.30
Previous charges/convictions										
Sexual	0.29	0.71	266	0.45	1.02	29	1.24	293	0.267	0.22
Violent	0.56	1.17	266	0.90	1.52	29	2.02	293	0.157	0.28
Criminal	2.08	4.09	266	3.38	5.21	29	2.48	293	0.117	0.31

MAST: Michigan Alcoholism Screening Test; BDHI: Buss—Durkee Hostility Inventory; DSFI: Derogatis Sexual Functioning Inventory; PCL-R: Psychopathy Checklist Revised; ABEL: Abel Cognitions Scale; d: Cohen's effect size; OR: odds ratio and indicates the likelihood of a male victim contributing to recidivism. Percentages reported indicate the proportion who had offended against a specific gender; SD: standard deviation.

($d = -0.52$), intelligence quotient (IQ) ($d = -0.55$), violence of the offence ($d = 0.60$), MAST ($d = 0.58$), BDHI ($d = 0.51$) and the ABEL cognition scale ($d = -0.42$). Regarding victim gender, the odds of sexual recidivism decreased by 8% for offenders with any male victims compared to those without male victims.

A Cox regression analysis was conducted to assess the predictive accuracy of the PCL-R on sexual recidivism, while controlling for time-at-risk. The PCL-R score predicted reliably sexual recidivism $\chi^2_{(1)} = 8.69$, $p < 0.01$. The odds ratio indicated that for every unit increase in the PCL-R, the predicted odds of sexual recidivism increased by 10%.

Table II shows the mean scores and comparisons across the predictor variables for the violent recidivists and the non-recidivists. Of the 15 variables examined, five were statistically significant according to the cut-off for statistical significance (< 0.003). Specifically, violent recidivists were younger ($d = -0.65$), demonstrated more problems with alcoholism, as measured by the MAST ($d = 0.81$), were more hostile according to the BDHI ($d = 0.64$), had higher scores on the PCL-R ($d = 0.66$) and had more prior criminal charges and/or convictions ($d = 0.69$) than non-recidivists. While it did not meet statistical significance, IQ produced a moderate association with violent recidivism ($d = -0.57$). Regarding victim gender, the odds of violent recidivism decreased by 31% for offenders with any male victims compared to those without male victims.

A Cox regression analysis was conducted to assess the predictive accuracy of the various predictor variables (age, MAST, BDHI, PCL-R, and previous criminal charges and/or convictions) on violent recidivism, while controlling for time-at-risk. From these predictors, age at time of assessment reliably predicted violent recidivism $\chi^2_{(5)} = 33.85$, $p < 0.001$. The odds ratio indicated that for every unit increase in age, the predicted odds of violent recidivism decreased by 7%.

Table III shows the mean scores and comparisons across the predictor variables for the criminal recidivists and non-recidivists. Of the 15 variables examined, six were statistically significant according to the cut-off for statistical significance (< 0.003). Specifically, criminal recidivists were younger ($d = -0.72$), demonstrated more problems with alcoholism, as measured by the MAST ($d = 0.70$), were more hostile according to the BDHI ($d = 0.67$), had higher scores on the PCL-R ($d = 0.76$) and had more previous violent ($d = 0.40$) and criminal ($d = 0.72$) charges and/or convictions than the non-recidivists. The odds ratio revealed little difference with regard to criminal recidivism and offending against a male victim.

A Cox regression analysis was conducted to assess the predictive accuracy of the various predictor variables (age, MAST, BDHI, PCL-R and previous violent and criminal charges and/or convictions) on criminal recidivism, while controlling for time-at-risk. From these predictor variables, age reliably predicted criminal recidivism $\chi^2_{(6)} = 36.60$, $p < 0.001$. The odds ratio indicated that for every unit increase in age, the predicted odds of criminal recidivism decreased by 7%.

Estimated hazard rate ratios [$\exp(\beta)$], confidence intervals and regression coefficients for Cox regression analyses are presented in Table IV.

Discussion

This study examined factors that differentiated recidivists and non-recidivists in a group of incest offenders and was a follow-up to the initial study by Firestone et al. (1999). As indicated earlier, the original study used the conventional method of recording recidivism based on the first offence after the index offence and found that over a 12-year period, with an average of 6.7 years, recidivism rates were 6.4%, 12.4% and 26.7% for sexual, violent and

Table II. Demographic, offence, psychological and criminal offence history data for violent recidivist and non-recidivist incest offenders.

Variable	Violent recidivism									
	Non-recidivist					Recidivist				
	M/%	SD	n	M/%	SD	n	F or χ^2	df	p	d or OR
Age (in years)	42.41	11.22	236	35.24	10.56	59	19.73	293	0.000	-0.65
Education (in years)	9.97	2.96	209	9.81	2.34	54	0.12	261	0.727	-0.06
Intelligence quotient	91.24	14.35	76	83.38	12.53	24	5.80	98	0.018	-0.57
Victim gender							0.54	1	0.462	0.69
Any male victim	15.2		25	10.9		5				
Female victim(s) only	84.8		140	89.1		41				
Violence of offence	0.34	1.05	211	0.65	1.44	51	2.99	260	0.085	0.27
Sexual intrusiveness	3.44	0.93	169	3.58	0.84	40	0.67	207	0.413	0.15
MAST	7.82	11.71	178	17.97	16.81	34	18.38	210	0.000	0.81
BDHI	24.67	11.45	225	32.15	12.91	52	17.19	275	0.000	0.64
DSFI	29.84	11.10	223	30.23	11.23	52	0.05	273	0.818	0.04
PCL-R	17.05	6.60	155	21.32	6.17	45	14.99	198	0.000	0.66
ABEL	4.55	0.43	195	4.46	0.47	36	1.54	229	0.216	-0.21
Paedophile Index	0.81	0.89	164	1.00	1.20	45	1.37	207	0.243	0.20
Previous charges/convictions										
Sexual	0.29	0.72	236	0.37	0.91	59	0.58	293	0.446	0.11
Violent	0.51	1.10	236	0.98	1.70	59	6.89	293	0.009	0.38
Criminal	1.67	3.34	236	4.64	7.09	59	22.06	293	0.000	0.69

MAST: Michigan Alcoholism Screening Test; BDHI: Buss—Durkee Hostility Inventory; DSFI: Derogatis Sexual Functioning Inventory; PCL-R: Psychopathy Checklist Revised; ABEL: Abel Cognitions Scale; d: Cohen's effect size; OR: odds ratio and indicates the likelihood of a male victim contributing to recidivism. Percentages reported indicate the proportion who had offended against a specific gender; SD: standard deviation.

Table III. Demographic, offence, psychological and criminal offence history data for criminal recidivist and non-recidivist incest offenders.

Variable	Criminal recidivism						F or χ^2	df	p	d or OR
	Non-recidivist			Recidivist						
	M/%	SD	n	M/%	SD	n				
Age (in years)	43.13	11.05	214	35.28	10.51	81	30.38	293	0.000	-0.72
Education (in years)	9.96	2.98	188	9.88	2.43	75	0.04	261	0.842	-0.03
Intelligence quotient	90.94	13.60	68	85.97	15.30	32	2.68	98	0.105	-0.35
Victim gender							0.002	1	0.966	0.98
Any male victim	14.3		21	14.1		9				
Female victim(s) only	85.7		126	85.9		55				
Violence of offence	0.32	1.02	191	0.62	1.39	71	3.65	260	0.057	0.27
Sexual intrusiveness	3.43	0.94	157	3.58	0.80	52	0.98	207	0.324	0.17
MAST	7.40	11.73	163	16.27	15.33	49	18.52	210	0.000	0.70
BDHI	24.05	11.22	205	31.85	12.62	72	24.12	275	0.000	0.67
DSFI	30.27	11.33	204	28.89	10.42	71	0.81	273	0.368	-0.12
PCL-R	16.52	6.31	138	21.35	6.47	62	24.71	198	0.000	0.76
ABEL	4.57	0.42	178	4.42	0.48	53	4.84	229	0.029	-0.35
Paedophile Index	0.81	0.86	146	0.93	1.13	63	0.60	207	0.438	0.13
Prior charges/convictions										
Sexual	0.30	0.82	214	0.37	0.86	81	0.38	293	0.539	0.08
Violent	0.47	1.06	214	0.96	1.62	81	9.44	293	0.002	0.40
Criminal	1.42	2.79	214	4.60	7.11	81	30.61	293	0.000	0.72

MAST: Michigan Alcoholism Screening Test; BDHI: Buss—Durkee Hostility Inventory; DSFI: Derogatis Sexual Functioning Inventory; PCL-R: Psychopathy Checklist Revised; ABEL: Abel Cognitions Scale; d: Cohen's effect size; OR: odds ratio and indicates the likelihood of a male victim contributing to recidivism. Percentages reported indicate the proportion who had offended against a specific gender; SD: standard deviation.

Table IV. Cox Regression Analyses for Sexual, Violent, and Criminal Recidivism as a Function of Demographic, Offence, Psychological, and Criminal Offence History Data.

Type of recidivism	Odds ratio				
	Variable	B	SE	Odds ratio	95% CI for odds ratio
Lower					Upper
Sexual recidivism					
PCL-R	0.091	0.031	1.10**	1.03	1.16
Violent recidivism					
Age	-0.070	0.024	0.932**	0.889	0.977
MAST	0.025	0.013	1.03	1.00	1.05
BDHI	0.035	0.025	1.04	0.986	1.09
PCL-R	0.035	0.044	1.04	0.950	1.13
Previous criminal	0.030	0.037	1.03	0.958	1.11
Criminal recidivism					
Age	-0.068	0.019	0.935***	0.900	0.970
MAST	0.018	0.012	1.02	0.995	1.04
BDHI	0.033	0.020	1.03	0.994	1.08
PCL-R	.048	0.033	1.05	0.984	1.12
Prior violent	0.042	0.155	1.04	0.770	1.42
Prior criminal	0.007	0.043	1.01	0.925	1.10

Note. MAST = Michigan Alcohol Screening Test; BDHI = Buss Durkee Hostility Inventory; PCL-R = Psychopathy Checklist Revised.

* $p < .05$, ** $p < .01$, *** $p < .001$.

criminal offences, respectively. This present study consisted of a larger sample size, an additional seven years of follow-up data, and recorded every offence during the follow-up period. Results revealed recidivism rates of 9.8%, 20% and 27.5%, for sexual, violent and criminal offences, respectively, by the 19th year. The increase in sexual and violent recidivism rates, in particular, compared to the previous study (Firestone et al., 1999) is not surprising given the lengthier follow-up period and because every offence after the index offence was counted. Examining every offence during the follow-up period reflects recidivism rates most effectively and identifies appropriate predictor variables most clearly, as it examines an offender's "life-risk".

Sexual recidivism

The sexual recidivism rate for this group of incest offenders was low, which makes it difficult to predict recidivism reliably (Quinsey et al., 1995). While only one variable met statistical significance (i.e. PCL-R), other variables such as age, IQ, violence of the offence, MAST, BDHI, and the Abel cognition scale demonstrated moderate associations with sexual recidivism. While psychopathy, as measured by the PCL-R, continues to demonstrate utility in predicting criminal behaviour in sexual and non-sexual offenders (Hare, 1996; Quinsey, Harris, Rice & Cormier, 1998) its ability to predict sexual recidivism has been mixed (Barbaree, Seto, Langton & Peacock, 2001; Firestone et al., 1999, 2006).

In a recent study (Olver & Wong, 2006), PCL-R scores were associated weakly with sexual recidivism, especially among incest offenders but were predictive of violent recidivism in the total sample. Interestingly, factor 1 scores (e.g. affective characteristics) were related

more significantly to sexual recidivism, whereas factor 2 scores (e.g. behavioural characteristics) were associated with non-sexual recidivism. In our group of incest offenders, subsequent analyses on the individual factors of the PCL-R were consistent with this finding. Specifically, factor 1 scores were associated with sexual recidivism but not violent recidivism. Factor 2 scores were associated with both sexual and violent recidivism, although the latter criterion produced the higher association.

Violent recidivism

Several variables discriminated between men who recidivated with a violent offence and those who did not recidivate. Specifically, the offender's age, degree of alcohol dependence, levels of hostility, psychopathy scores and previous criminal charges and/or convictions statistically differentiated the groups. While not reaching statistical significance, IQ produced a moderate association with recidivism, suggesting that lower intellectual functioning was related to violent recidivism.

Criminal recidivism

An offender's age, degree of alcohol abuse, level of hostility, psychopathy score and previous violent and criminal charges and/or convictions reliably differentiated the criminal recidivist and non-recidivist incest offenders.

Incest offenders have been regarded consistently as lower risk to re-offend compared to other types of sexual offenders (e.g. Quinsey et al., 1995). The results of this study have supported this claim. Specifically, the recidivism rates identified in this study were considerably lower than rates demonstrated in homogeneous samples of extrafamilial child molesters, rapists (Wexler, 2005) and exhibitionists (Firestone et al., 2006), all of which were from the same clinic and employed similar follow-up periods.

The predictors of recidivism in this study were consistent with the broader literature on recidivism in sexual offenders, such as age, PCL-R and hostility (Hanson & Bussiere, 1998; Hanson & Morton-Bourgon, 2005). However, there were some differences with past research. Most notably, phallometric assessment was unrelated to any type of recidivism in this group of incest offenders. Given the consistency with which deviant preference predicts recidivism in sexual offenders against children, it is somewhat unclear why this variable would not have discriminated between the groups, although concerns with the validity of the measurement should be taken into account (Kingston, Firestone, Moulden & Bradford, 2007; Marshall & Fernandez, 2000).

Alternatively, as noted earlier, the most recent meta-analysis conducted by Hanson and Morton-Bourgon (2005) included very few studies pertaining to pure groups of incest offenders. Perhaps deviant preference is more specific to extrafamilial child molesters rather than incest offenders as a predictor of recidivism. A similar argument can be made with regard to victim gender. While some authors have affirmed the utility of using victim gender as a predictor variable (e.g. Hanson et al., 1993), others have found inconsistent results (e.g. Abel, Mittelman, Becker, Rathner & Rouleau, 1988). Preferential interest in boys, as a risk factor, may be more applicable to extrafamilial child molesters than with incest offenders. However, it should be acknowledged that the sample size of recidivists with male victims was small and therefore the lack of predictive validity may be attributed to decreased power.

Several empirical studies have examined the crimes committed by sexual offenders to establish the extent of specialization, or lack thereof, inherent in offence behaviour (see Lussier, 2005 for a review). Results have indicated that extrafamilial child molesters show less

versatility in offending than do rapists and non-sexual offenders (Hanson et al., 1995; Lussier, 2005). Moreover, Lussier (2005) found no difference in the diversity of crimes between extra-familial and intra-familial child molesters, suggesting that the latter group most often commits sexual crimes rather than a mixture of sexual and non-sexual offences. However, the rates and versatility of offending in this present study of incest offenders suggest that this group is at risk for perpetrating both sexual and non-sexual crimes. Moreover, the variables that were predictive of recidivism were non-sexual criminogenic variables (e.g. PCL-R). As such, it is important to consider non-sexual offending and non-sexual criminogenic variables as important risk variables in all types of sexual aggressors (Lussier, 2005).

Finally, we feel that the identification of non-sexual criminogenic variables among incest offenders supports an integrative treatment design, including various types of sexual offenders in the group setting and discussing both sexual offence specific targets (e.g. sexual interests) and more general targets (e.g. anger and hostility) with group participants (for excellent descriptions of treatment programmes, see Marshall, Marshall, Serran & Fernandez, 2006; and Yates et al., 2000).

Limitations

The present study had several limitations. Most importantly, only the offences that came to the attention of authorities were considered. As such, the final results are probably an underestimation of the true rate of recidivism. Additionally, our study did not account for treatment as a moderator of recidivism. Given that treatment has a positive impact on the likelihood of recidivism among sexual offenders in general (Hanson et al., 2002; Lösel & Schmucker, 2005; Marshall et al., 1999) and incest offenders in particular (Owen & Steele, 1991), the fact that treatment participation among the groups was not examined may have influenced the results.

Given that most sexual offenders return to the community at some point (Motiuk & Belcourt, 1996), it is essential that appropriate management strategies are implemented and that effective prediction tools are utilized. The results of the present investigation suggest that general criminogenic (non-sexual) risk factors were particularly salient for differentiating recidivists and non-recidivists among this sample. Consequently, evaluators should consider such factors when conducting an assessment or when formulating treatment/case management strategies.

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