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In this study, we developed a structured risk checklist, the Child Pornography Offender Risk Tool (CPORT), to predict any sexual recidivism among adult male offenders with a conviction for child pornography offenses. We identified predictors of sexual recidivism using a 5-year fixed follow-up analysis from a police case file sample of 266 adult male child pornography offenders in the community after their index offense. In our 5-year follow-up, 29% committed a new offense, and 11% committed a new sexual offense, with 3% committing a new contact sexual offense against a child and 9% committing a new child pornography offense. The CPORT items comprised younger offender age, any prior criminal history, any contact sexual offending, any failure on conditional release, indication of sexual interest in child pornography material or prepubescent or pubescent children, more boy than girl content in child pornography, and more boy than girl content in other child depictions. The CPORT was significantly associated with any sexual recidivism, with moderate predictive accuracy, and thus has promise in the risk assessment of adult male child pornography offenders with further cross-validation.

Keywords: child pornography offenders, recidivism, risk assessment

There is increasing attention to child pornography offenders, reflected in and driven by community concern, more law enforcement resources, increasing numbers of arrests, more clinical referrals, and tougher policies (United States Department of Justice, 2010). In the United States and Canada, *child pornography* is

defined as a sexually explicit depiction of a person under the age of 18; in Canada, child pornography can also include depictions of fictional children (e.g., anime) or text describing explicit sex between an adult and a minor.

A central concern is the risk that child pornography offenders pose to directly sexually offend against children (see Seto, 2013). A majority of child pornography offenders are sexually interested in children, and it follows that such individuals might be at risk of sexual contacts with children (Seto, Cantor, & Blanchard, 2006; Seto, Reeves, & Jung, 2010). Seto, Hanson, and Babchishin (2011) conducted a meta-analysis of online sexual offender studies and determined that approximately one online offender in eight had a criminal record for contact sexual offenses. Most of the online offenders in the included samples had committed child pornography offenses, and detected child pornography offenders over the past decade commonly use online technologies as part of their offending (see Eke, Seto, & Williams, 2011). In the subset of six studies in which self-report was available as a result of participation in treatment and/or polygraph, about half (55%) of the online sexual offenders admitted to a contact sexual offense against a child.

In the same meta-analysis by Seto et al. (2011), nine studies reported reoffending (recidivism) rates; most of the studies had short follow-up times, ranging from 1.5 to 6.0 years, with an average follow-up time of 3.0 years. The *sexual recidivism rate* (usually defined as a new sexual arrest, charge, or conviction) was 5%, belying the notion that all child pornography offenders are at high risk to reoffend (or to be detected for a new offense). There is clearly heterogeneity in risk to reoffend, however, and certain factors may identify higher risk offenders.

A follow-up study of 541 child pornography offenders identified through a provincial sex offender registry (part of the Seto et al., 2011, meta-analysis) found that 7% committed a new child por-

nography offense and 4% committing a new contact sexual offense (Eke et al., 2011). This study demonstrated that established criminological risk factors such as offender age and criminal history predicted recidivism among child pornography offenders as expected: Younger offenders and offenders with more extensive criminal histories were more likely to reoffend. There was limited information, however, because the registry lacked details on offenses and other offender characteristics (Eke et al., 2011; Seto & Eke, 2005).

Other follow-up research has highlighted risk factors for child pornography offender recidivism. Faust, Renaud, and Bickart (2009; also included in the Seto et al., 2011, meta-analysis) studied predictors of recidivism among 870 male child pornography offenders who had been assessed by the U.S. Bureau of Prisons between 2002 and 2005. The average length of follow-up was almost 4 years, with a sexual rearrest rate of 6%. Of the 30 predictors examined, five were significant predictors of sexual rearrest: lower education, being single, having non-Internet child pornography, prior sexual offender treatment, and not having depictions of adolescent minors.

In another study, Wakeling, Howard, and Barnett (2011) examined how a modified version of a sex offender risk-assessment tool used in the United Kingdom (Thornton et al., 2003) performed in a large sample of 1,344 child pornography offenders. The Risk Matrix comprises the following risk items: offender age, sexual sentencing history, any additional sentencing history, never having a live-in relationship, ever having a noncontact sexual offense, and whether any sexual victims were male or were strangers. Scores significantly predicted sexual recidivism after a 2-year follow-up period, despite a low recidivism base rate of 3%.

Many of these risk factors are familiar from the literature on major predictors of recidivism among contact sex offenders (Hanson & Morton-Bourgon, 2005). Most risk factors among contact sex offenders broadly fall into two risk dimensions: *antisociality* (reflecting personality traits, attitudes and beliefs, and behaviors that underlie general criminality) and *atypical sexuality* (reflecting paraphilic sexual interests, excessive sexual preoccupation, and other extreme or unusual aspects of sexuality). Seto (2008, 2013) proposed that atypical sexual interests represent potential motivations for sexual offending, including child pornography offending, whereas antisociality represents potential facilitators of acting on these motivations (see also Pullman, Stephens, & Seto, in press). Child pornography offenders high on measures of both antisociality and atypical sexual interests are expected to be the most likely to sexually reoffend (Seto, 2013).

Besides motivating and facilitating factors, situational or opportunity factors might also be relevant—particularly access to children. It is logical to assume that someone who resides with children, works or volunteers with children, or otherwise has regular contact with children is at greater risk of sexually offending against children than someone with much less access. Some researchers and clinicians have also speculated that child pornography–specific factors are related to recidivism (United States Sentencing Commission, 2012). These factors might include duration of child pornography involvement, the age or gender of depicted children, the presence of violent or other paraphilic content in pornography, and the size of pornography collections.

The Present Study

We conducted the present study to identify risk factors for recidivism among child pornography offenders using a richer data set than the registry follow-up reported by Eke et al. (2011). The registry included age and criminal history; the present data set included information from arrest reports, police interviews, child pornography collections, and records obtained by police investigators such as interviews with family members and any previous assessment reports. Given our partnerships with police services, we focused on variables that were likely to be available to police investigators in an attempt to develop a structured risk checklist to help prioritize investigators' work (see Eke & Seto, 2012). A structured assessment of child pornography offender risk to reoffend would also be helpful to police threat assessors and other professionals making risk-related decisions, including at prosecution and sentencing, and for institutional placement, treatment recommendations, and supervision.

To conduct this study, we coded data from the investigation files of convicted child pornography offenders. Drawing from past research on the risk factors for contact sexual offending against children, we hypothesized that child pornography offenders who scored higher on variables reflecting antisociality (specifically, criminal history, conditional release failure, and substance misuse), pedophilia or other paraphilic interests (specifically, self-reported sexual interest in children and child pornography content depicting prepubescent children rather than pubescent or adolescent minors), or opportunity (specifically, residing or working with children and having specific contact information about children) would be more likely to sexually reoffend. We then examined whether predictors of sexual recidivism identified in univariate analyses could be combined in a structured checklist for clinical and criminal justice decision makers.

Method

Sample

The initial study sample consisted of 301 child pornography case files provided by 10 Ontario, Canada, police services. A third of the cases (36%) came from the provincial police service, which covers much of rural Ontario and collaborates on investigations with many municipal or regional police services. Another 41% of the cases were provided by two large police services, one municipal (21%) and one regional (20%). Cases initially came to the attention of police in a variety of ways, including third-party reporting, victim complaints (for those who had also committed contact sexual offenses or sexual solicitation offenses), and offender activity online.

Police cases were included if they involved a man (age 18 or older) who was subsequently convicted of a child pornography offense that was either not appealed or not successfully appealed. Most (88%) of the cases involved the use of online technologies to access child pornography. There was no preselection of cases; police provided all of their available closed child pornography case

files, and these cases were included if there was sufficient information. The case that was investigated by the participating police service was considered to be the index child pornography offense; some offenders had a prior child pornography offense that was counted as part of their criminal history. In a few cases, a police service investigated an offender more than once; in these cases, we coded both files and later randomly selected (by coin toss) a case to be designated as the index offense, resulting in the other child pornography investigation becoming either part of the offender's criminal history or a recidivism event. We used this procedure to avoid artificially inflating child pornography offense history or recidivism rates. Overall, 17 offenders (6%) had charges for child pornography offenses prior to their index conviction.

We included child pornography offenders with contact sexual offenses (or *dual offenders*), even though such offenders could have their risk to reoffend assessed using an established measure such as the Static-99R (Helmus, Thornton, Hanson, & Babchishin, 2012). We did so for three reasons: (a) Online offending is a relatively new phenomenon, and there were few such mixed offenders in the development or validation studies of the Static-99R; (b) whether someone has previously committed a contact sexual offense is itself associated with risk to reoffend in other follow-up research and could be captured by one or more sexual offense history items (Eke et al., 2011); and (c) established measures like the Static-99R focus on contact sexual or violent recidivism and do not specifically consider noncontact sexual reoffending. Following Eke et al., we distinguished child pornography offenders according to their criminal histories, dividing them into those who only had child pornography offenses, those who also had committed nonviolent or nonsexually violent offenses, and those who had committed contact sexual offenses.

The police investigations took place between 1993 and 2006, with 91% of investigations occurring from 2000 onward. We removed 12 offenders who were deported after their index convictions, one who moved out of Canada, and two who died within 3 months of follow-up, resulting in a follow-up sample of 286 child pornography offenders. We later discuss a fixed follow-up of 266 offenders who all had 5 years of opportunity to reoffend. Of the follow-up sample of 286 offenders, almost a quarter (72 cases) had one child pornography charge at index; the remaining had multiple child pornography charges (120 cases; 42% of the total sample) or charges for other sexual (36 cases; 13% of the total sample) or nonsexual (58 cases; 20% of the total sample) offenses as well. Almost all offenders had at least one index charge for possession (99%), over a third (37%) for distribution, a fifth (23%) for making (e.g., production, publishing, morphing), and another fifth (21%) for accessing child pornography. Offenders charged with production (*making* in Canada) may have taken images of a minor in person, taken pictures of a minor over the Internet (e.g., via a Webcam), or altered images to create a new image. Knowingly accessing child pornography, for example by viewing it, even without retaining a copy and thus being in possession of child pornography, is against the law in Canada. The sample's characteristics, for the entire sample and for the three groups distinguished by offense history (combining preindex and index offenses), are summarized in Table 1.

Procedure

File information included demographic characteristics and criminal history records, police occurrence reports, recorded or transcribed interviews with suspects, interviews with family members or other witnesses, officer notes, forensic computer analysis reports, and the child pornography content seized by police (usually in a digital format). Many cases also had evidence about other pornography that was accessed or downloaded by the offender, including adult pornography and pornography depicting paraphilic themes such as fetishism, sadomasochism, or bestiality.

Case files were coded at each police service by a research assistant or one of the authors (Angela W. Eke). Coding took ½–3 days per case. The coding domains were as follows: (a) demographics (offender age at the time of the index offense, occupation, education, marital status); (b) index charges and convictions; (c) criminal history (age at first charge, number and types of prior offenses); (d) child pornography content, coded as the estimated percentage (within 5%) of images by age category (infant, prepubescent, or pubescent) and gender (boy or girl); (e) child pornography collecting behavior (e.g., organization of material, morphing of images, use of nonprivate computers); (f) substance use; (g) admitted or diagnosed sexual interest in prepubescent or pubescent children; (h) evidence of other paraphilic interests on the basis of pornography content (e.g., sadism, fetishism); and (i) type and estimated amount of adult pornography. Additional descriptions of the variables we coded are provided in the following sections.

Recidivism Outcomes

After file coding had been completed, we obtained recidivism data from a national database of criminal charges and convictions maintained by the Canadian Police Information Centre, a service of the Royal Canadian Mounted Police, and from a review of occurrence reports provided by individual police services. We coded any new criminal charge or conviction as *recidivism*, distinguishing nonviolent offenses; violent offenses; contact sexual offenses; noncontact sexual offenses; child pornography offenses; and failures to abide by conditions of release on bail, probation, or parole. These recidivism categories were not mutually exclusive.

We defined a *nonviolent offense* as a charge or conviction for an offense that did not involve physical contact with a person (e.g., theft, possession of narcotics). Child pornography and noncontact sexual offenses were also counted in this category. We defined a *violent offense* as a charge or conviction for a sexual or nonsexual offense involving physical contact with a victim. A *sexual offense* was one that could be clearly identified as sexual on the basis of the type of criminal offense listed or other information provided in the police reports. We further divided sexual offenses into those involving physical contact with a victim (*contact sexual offenses*) and those that did not (*noncontact sexual offenses*). Previous research on an overlapping sample of child pornography offenders indicated that most contact offenses involve child victims (Eke et al., 2011). Noncontact sexual offenses included new charges or convictions for possession, distribution, or production of child pornography as well as offenses such as indecent exposure. Individuals who committed contact sexual offenses as part of the production of child pornography were also charged with those offenses; individuals charged only with a production offense had

Table 1

Demographic Characteristics Distinguishing Child Pornography (CP)–Only Offenders and CP Offenders With Other Known Criminal Involvement Either Preindex or at Index

Variable	Total sample ($N = 286$)	CP only ($n = 135$; 47%)	CP + nonviolent and/ or nonsexual violent offending ($n = 90$; 32%)	CP + contact sex offending ($n = 61$; 21%)	Comparison statistic
Age: M (SD) [95% confidence interval]					
Age at index conviction (years)	39.0 (12.5) [37.6, 40.5]	38.0 (12.5) [35.9, 40.1]	38.2 (12.5) [35.6, 40.9]	42.5 (11.8) [39.5, 45.6]	$F(2, 283) = 3.09$, $p = .05$, $\omega^2 = .015$
Age at first criminal conviction (years)	34.0 (13.1) [32.4, 35.5]	37.9 (12.6) [35.7, 40.0]	30.6 (13.5) [27.7, 33.4]	30.2 (11.4) [27.3, 33.2]	$F(2, 282) = 12.3$, $p < .001$, $\omega^2 = .073$
Highest grade achieved: n (%)					
Less than high school	28 (10)	7 (5)$_{a}$	8 (9)$_{a,b}$	13 (21)$_{b}$	$\chi^2(4, N = 164) = 18.2$, $p = .001$, $V = .236$
Completed high school	76 (27)	38 (28)$_{a}$	22 (24)$_{a}$	16 (26)$_{a}$	
Postsecondary education	60 (21)	36 (27)$_{a}$	19 (21)$_{a,b}$	5 (8)$_{b}$	
Occupation: n (%)^{a}					
Not working	56 (20)	14 (10)$_{a}$	18 (20)$_{a}$	24 (39)$_{b}$	$\chi^2(8, N = 278.) = 37.8$, $p < .001$, $V = .261$
Student	22 (8)	16 (12)$_{a}$	4 (4)$_{a}$	2 (3)$_{a}$	
Unskilled/semiskilled	73 (26)	30 (22)$_{a}$	24 (27)$_{a}$	19 (31)$_{a}$	
Skilled	54 (19)	27 (20)$_{a}$	21 (23)$_{a}$	7 (12)$_{a}$	
Professional	73 (26)	47 (35)$_{a}$	19 (21)$_{b}$	7 (12)$_{b}$	
Marital status: n (%)					
Single	154 (54)	75 (56)$_{a}$	48 (53)$_{a}$	31 (51)$_{a}$	$\chi^2(4, N = 285) = 15.7$, $p = .003$, $V = .166$
Married/common law	91 (32)	49 (36)$_{a}$	29 (32)$_{a}$	13 (21)$_{a}$	
Separated/divorced/widowed	40 (14)	10 (7)$_{a}$	13 (14)$_{a,b}$	17 (28)$_{b}$	
Substance use: n (%)					
Any substance use problems	52 (18)	5 (4)$_{a}$	32 (36)$_{b}$	15 (25)$_{b}$	$\chi^2(2, N = 281) = 38.6$, $p = .001$, $V = .371$
Alcohol use problems	38 (13)	5 (4)$_{a}$	19 (21)$_{b}$	14 (23)$_{b}$	$\chi^2(2, N = 281) = 20.3$, $p < .001$, $V = .269$
Drug use problems	23 (8)	1 ($>$1)$_{a}$	18 (20)$_{b}$	4 (7)$_{a,b}$	$\chi^2(2, N = 281) = 27.0$, $p < .001$, $V = .310$
Criminal history: n (%)					
Juvenile record	24 (8)	0 (0)$_{a}$	15 (1)$_{b}$	9 (15)$_{b}$	$\chi^2(2, N = 281) = 24.4$, $p < .001$, $V = .295$
Any prior offense	123 (43)	3 (2)$_{a}$	69 (77)$_{b}$	51 (84)$_{b}$	$\chi^2(2, N = 286) = 174.2$, $p < .001$, $V = .781$
Prior CP offense	17 (6)	3 (2)$_{a}$	11 (12)$_{b}$	3 (5)$_{a,b}$	$p = .008^{b}$
CP offending (preindex or at index): n (%)^{c}					
CP possession	284 (99)	135 (100)$_{a}$	89 (99)$_{a}$	60 (98)$_{a}$	$\chi^2(2, N = 286) = 1.9$, $p = .38$
CP distribution	106 (37)	49 (36)$_{a,b}$	42 (47)$_{b}$	15 (25)$_{a}$	$\chi^2(2, N = 286) = 7.7$, $p = .02$, $V = .164$
CP production	65 (23)	21 (16)$_{a}$	23 (26)$_{a,b}$	21 (34)$_{b}$	$\chi^2(2, N = 286) = 9.1$, $p = .01$, $V = .179$
CP accessing	60 (21)	38 (28)$_{a}$	15 (17)$_{a,b}$	7 (11)$_{b}$	$\chi^2(2, N = 286) = 8.5$, $p = .01$, $V = .173$

Note. Some data are missing, so group sizes vary across variables. Each subscript letter denotes a subset of the row category whose column proportions do not differ significantly from each other at the $p < .05$ level (using the Bonferroni method).
^{a} Unskilled/semiskilled included truck drivers and laborers, skilled included mechanics and technicians, and professional included teachers and doctors. ^{b} The Freeman–Halton extension of Fisher's exact test was calculated for a 2×3 contingency table in which one or more cells did not mean the expected minimum of 5. ^{c} These categories are not mutually exclusive: An offender may be charged with more than one type of child pornography

created images—for example, morphing the face of a known child onto an existing child pornography image. We also considered *child pornography offenses* separately.

Follow-Up Time

Follow-up time and time at risk were calculated using police file information, police occurrence reports, and national criminal records. We calculated follow-up time as the difference between the date of first release from the index child pornography charge(s) and the date when criminal records were checked in the summer of 2012. Time in custody (e.g., time in jail for the index or any subsequent offense) was subtracted, so follow-up time represented the offender's opportunity to offend while residing in the community ($M = 8.3$ years, $SD = 2.5$ years; range = 1.2–17.6 years). We also calculated time at risk as the difference between the date of first release from the index charge(s) to the first recidivism event in each particular category. We conducted a 5-year fixed follow-up analysis to control for variability in follow-up time; there were 266 offenders who had at least 5 years at risk. Using the same recidivism outcomes as detailed earlier, we coded whether an offender committed a new offense within the 5-year follow-up period. Any offenses (first or additional) committed after 5 years at risk were not counted; 21 offenders (8%) committed their first reoffense outside the 5-year fixed time frame (therefore, even though they may have had 5 years of follow-up and did recidivate, they were not counted as recidivists in these prediction analyses). As a design feature, fixed follow-ups tend to reduce random variation in a study and produce stronger effects or relationships with recidivism than variable-time follow-ups (see Hanson & Morton-Bourgon, 2009; Harris & Rice, 2003).

Interrater Reliability

We examined interrater reliability for the study variables—using cases coded at the beginning, middle, and end of the study coding period—to check for drift in reliability over time; no drift was observed. Fifty-six cases (20% of the sample) were coded by one of the authors (Angela W. Eke) and one of the research assistants; 25 of these 56 cases were coded by both research assistants. Intraclass correlation coefficients (two-way random model, absolute agreement) for all reported continuous variables were a minimum of .70 for single measures and .80 for average measures; kappas were .75 or higher for categorical variables. Any disagreements between raters were resolved by consensus. The follow-up data were later coded by one of the authors (Angela W. Eke) and by two research assistants. Fifty-six cases were included in this interrater reliability check. Again, there was no evidence of drift over the coding period, and all reported variables met the same minimum correlation values for interrater reliability.

Results

Statistical Analysis

Our analytic strategy started with a statistical description of the sample and then planned comparisons on the study variables across three groups based on criminal history, consistent with Eke et al. (2011): child pornography offenses only, child pornography plus any nonviolent or nonsexually violent offenses, and dual offenses (child pornography plus contact sexual offending; (see Tables 1, 2, 3, and 4). Next, we searched for univariate predictors of recidivism using the 266 offenders at risk for 5 years (see Table 5). Last, we combined predictors across domains to evaluate their predictive accuracy in a structured checklist, the Child Pornography Offender Risk Tool (CPORT [pronounced "seaport"]). We then examined observed and predicted recidivism probabilities for CPORT scores using logistic regression and the Hosmer–Lemeshow test for goodness of fit (see Table 6).

Sample Characteristics

Criminal history and details about the index child pornography offending are reported in Table 1 for the full sample of 286 child pornography offenders. Almost half (43%) of the sample had any criminal history. A fifth of offenders (19%) had some type of prior sexual offense.

Substance Use

Thirty-eight offenders (13%) in the sample had some indication of alcohol use problems (e.g., fired for drinking at work, driving while impaired charges, prior alcohol abuse treatment), and 23 (8%) were known to have problems with other drug use (e.g., charged with drug use–related offenses, prior drug abuse treatment). Almost a fifth of offenders (18%) were known to have some type of substance use problem (see Table 1).

Child Content: Child Pornography, Nudity, and Other Images

We coded child-related material seized by police during their investigations (see Table 2). The relative amounts of different categories of child pornography were estimated by the research assistants, with good interrater reliability, sometimes aided by police counts used for court purposes. We followed Canadian legal definitions, with *nudity* comprising images of children who were fully or partially undressed but who were not engaged in any sexual activity; not posed in a sexualized manner; and not emphasizing the chest, anal, or genital areas. *Other child images* depicted clothed children; these included images from public Web sites, catalogues, and pictures of children in public spaces. Image collections were coded for the estimated proportions of child pornography, child nudity, and other child images depicting boys or girls and across three age categories (infant/toddler, prepubescent, pubescent).

Most offenders (91%) had some content depicting girls, with the large majority of the sample (79%) having collections that were predominantly (≥75%) of girls; almost half of the sample (47%) had only girl content. In contrast, among the half (53%) with any boy content, only 9% had exclusively boy content. In other words, content depicting girls was much more common than content depicting boys. Consistent with past research on child pornography collections (e.g., Quayle & Jones, 2011), the majority of the sample had content depicting prepubescent or pubescent girls. Content depicting infants or toddlers was less common. A large majority (86%) of the offenders also had child nudity content; in a third (31%) of cases, offenders had more child nudity than child

Table 2

Characteristics of Pornography Content and Collecting Behavior Distinguishing Child Pornography (CP)–Only Offenders and CP Offenders With Other Known Criminal Involvement Either Preindex or at Index

Variable	Total sample ($N = 286$)	CP only ($n = 135$; 47%)	CP + nonviolent and/or violent offending ($n = 90$; 32%)	CP + contact sex offending ($n = 61$; 21%)	Comparison statistic
Years collecting: M (SD) [95% confidence interval]	3.5 (5.1) [2.8, 4.1]	2.9 (2.2) [2.5, 3.3]	4.3 (7.8) [2.5, 6.1]	3.5 (4.5) [2.2, 4.8]	$F(2, 236) = 1.6, p = .20, \omega^2 = .005$
Organized CP content (moderately/highly): n (%)	108 (38)	56 (41)[a]	33 (37)[a]	19 (31)[a]	$\chi^2(2, N = 240) = 2.4, p = .29, V = .101$
Any CP anime content: n (%)	92 (32)	46 (34)[a]	29 (32)[a]	17 (28)[a]	$\chi^2(2, N = 286) = 0.7, p = .69, V = .051$
Depicted gender: M (SD) [95% confidence interval]					
CP girl (%)	43.6 (29.2) [40.2, 47.0]	45.2 (27.5) [40.5, 50.0]	50.2 (29.3) [44.1, 56.4]	30.0 (29.0) [22.6, 37.4]	$F(2, 283) = 9.7, p < .001, \omega^2 = .057$
CP boy (%)	11.4 (19.9) [9.0, 13.7]	9.4 (17.3) [6.5, 12.4]	9.5 (17.5) [5.8, 13.2]	18.3 (26.3) [11.6, 25.0]	$F(2, 283) = 4.9, p = .008,^a \omega^2 = .026$
Nudity girl (%)	24.6 (23.1) [21.9, 27.3]	27.0 (23.4) [23.0, 31.0]	24.9 (23.8) [20.0, 30.0]	18.8 (20.6) [13.5, 24.0]	$F(2, 283) = 2.7, p = .07, \omega^2 = .012$
Nudity boy (%)	4.8 (12.2) [3.4, 6.2]	4.0 (11.1) [2.1, 5.9]	2.8 (8.9) [0.96, 4.7]	9.3 (16.8) [5.0, 13.7]	$F(2, 283) = 5.9, p = .003,^a \omega^2 = .033$
Other girl (%)	14.5 (18.7) [12.3, 16.6]	14.9 (18.5) [11.7, 18.0]	12.4 (16.8) [8.9, 15.9]	16.6 (21.5) [11.1, 22.1]	$F(2, 283) = 1.0, p = .36, \omega^2 = .000$
Other boy (%)	5.1 (13.9) [3.4, 6.7]	4.0 (11.8) [2.0, 6.1]	3.1 (10.6) [0.9, 5.3]	10.2 (20.2) [5.0, 15.3]	$F(2, 283) = 5.5, p = .005,^a \omega^2 = .003$
Difference of boy:girl CP (%)	−6.5 (8.4) [−7.5, −5.5]	−7.2 (7.6) [−8.4, −5.9]	−8.3 (8.0) [−10.0, −6.7]	−2.3 (9.4) [−4.8, 0.07]	$F(2, 283) = 10.7, p < .001,^a \omega^2 = .063$
Age categories: M (SD) [95% confidence interval]					
CP infant/toddler (%)	1.3 (4.7) [0.7, 1.8]	0.9 (2.2) [0.5, 1.3]	1.9 (7.3) [0.2, 3.4]	1.1 (3.5) [0.2, 2.0]	$F(2, 283) = 1.2, p = .30,^a \omega^2 = .002$
CP prepubescent (%)	33.6 (24.2) [30.8, 36.4]	34.7 (23.2) [30.8, 38.7]	36.1 (26.1) [30.6, 41.5]	27.5 (23.0) [21.6, 33.3]	$F(2, 283) = 2.6, p = .08, \omega^2 = .011$
CP pubescent (%)	20.0 (19.0) [17.9, 22.3]	19.0 (16.3) [16.3, 21.8]	21.8 (20.0) [17.6, 26.0]	19.8 (22.7) [13.9, 25.6]	$F(2, 283) = 0.6, p = .57, \omega^2 = .000$
Difference of younger:pubescent CP (%)	9.9 (9.3) [8.8, 11.0]	10.3 (8.5) [8.8, 11.7]	10.1 (9.9) [8.0, 12.2]	8.8 (10.1) [6.2, 11.4]	$F(2, 283) = 0.6, p = .57, \omega^2 = .000$

Note. The mean percentages do not necessarily add up to 100% in categorical ratings of content because percentages were estimated in intervals (e.g., 0%–5%, 6%–10%) rather than calculated from specific counts. Also, the full 100% of an offender's collection is based on their CP, nudity, and other child content. Each subscript letter denotes a subset of the row category whose column proportions do not differ significantly from each other at the $p < .05$ level (using the Bonferroni method).
[a] Nonhomogeneous variance.

Table 3

Access to Children at Index, Distinguishing Child Pornography (CP)–Only Offenders and CP Offenders With Other Known Criminal Involvement Either Preindex or at Index

Access to children at index	Total sample (N = 286)	CP only (n = 135; 47%)	CP + nonviolent and/or violent offending (n = 90; 32%)	CP + contact sex offending (n = 61; 21%)	Comparison statistic
Children living in residence	80 (28)	40 (30)$_a$	22 (24)$_a$	18 (30)$_a$	χ^2(2, N = 279) = 0.73, p = .69, V = .051
Works with children	18 (6)	9 (7)$_a$	6 (7)$_a$	3 (5)$_a$	p = .903[a]
Volunteers with children	21 (7)	10 (7)$_a$	5 (6)$_a$	6 (10)$_a$	p = .582[a]
Specific information on children	26 (9)	8 (6)$_a$	7 (8)$_{a,b}$	11 (18)$_b$	χ^2(2, N = 264) = 7.9, p = .02, V = .174
Online sexual solicitation (child or undercover); not necessarily a charge	28 (10)	5 (4)$_a$	12 (13)$_b$	11 (18)$_b$	χ^2(2, N = 286) = 11.6, p = .003, V = .202
Online sexual solicitation or specific information	38 (13)	11 (8)$_a$	14 (16)$_{a,b}$	13 (21)$_b$	χ^2(2, N = 264) = 7.3, p = .03, V = .166

Note. All values are *n*s (with percentages in parentheses). Each subscript letter denotes a subset of the row category whose column proportions do not differ significantly from each other at the p < .05 level (using the Bonferroni method).
[a] The Freeman–Halton extension of Fisher's exact test was calculated for a 2 × 3 contingency table in which one or more cells did not mean the expected minimum of 5.

pornography content. A majority (78%) had other child images. Almost a quarter of offenders (22%) had child pornography that also met the Canadian legal definition of *obscenity* (e.g., depicting violence, depicting bondage).

Adult Pornography

Most offenders (90%) also had adult pornography, though we were missing details such as total number of images for many cases because this material is not illegal and police may not record this content. Most (84%) had content depicting sexually mature looking people who might be legal minors (e.g., "barely legal" pornography); because of ambiguity about the ages of depicted individuals, this content was not classified as child pornography. Many (87%) had pornography depicting fetish or other paraphilic themes such as sadomasochism (e.g., bondage) and bestiality (see Figure 1). We distinguished between the appearance of any paraphilic content and content that was considered potentially indicative of a paraphilic sexual interest. This reliable judgment was made by research assistants on the basis of amount and organization of content. The most common (indicative) paraphilic theme was sadomasochism, with 18% of the sample having pornography considered suggestive of this specific sexual interest (e.g., files were descriptively labeled or organized into their own folders). The next most common paraphilic themes were bestiality (15%), fetishism (10%), and urophilia/coprophilia (10%).

Atypical Sexual Interests and Behavior

During their police interviews, 109 offenders (38%) admitted a sexual interest in children/child pornography, with 91 (32%) admitting a sexual interest in prepubescent children and 35 (12%) admitting a sexual interest in pubescent children; some offenders admitted interests in both age groups (see Figure 1). Of the 109 who admitted sexual interest, about a third (30%) had some indication of a diagnosis of pedophilia, typically through case documents (e.g., information about previous mental health assess-

ments). A total of 113 offenders either admitted a sexual interest or had indication of a diagnosis of pedophilia or hebephilia.

Access to Children

We were interested in the child pornography offenders' access to children as an indication of possible opportunity to directly offend against children (see Table 3). We also examined whether offenders had contact information about specific children that was considered outside of what would be necessary for work or other obvious purposes (e.g., a teacher with a class list, a family member with contact information for related children). Examples of this information included where specific children lived, ratings of their appearance, and descriptions of the offenders' sexual attraction to particular children. Lastly, we also coded information about online luring offenses; 28 offenders (10%) were known to have used the Internet for sexual chat with a minor (or an undercover officer posing as a minor) either prior to or as part of the index offense.

Recidivism

For the full sample of 286 offenders, over a third (39%) had any new offense during the follow-up, with 4% committing a subsequent contact sex offense against a child, 12% a new child pornography offense, and 16% any new sexual offense (contact or noncontact). Overall, 8% committed a violent reoffense, which included contact sexual offenses. We also report outcome information for groups distinguished by criminal history (see Table 4). We found some additional information in police occurrence reports about undetected recidivism or suspicious behavior that did not result in criminal charges and, therefore, were not included in the recidivism analyses. For example, one offender accessed child pornography after his index offense, but this was not known until he died and his computer was examined. Another offender was investigated for new child pornography offenses following discovery that he possessed images of naked children, but the material was determined not to meet

Table 4
Recidivism Outcomes on the Basis of Criminal History (Prior Offenses and Index Offenses)

Recidivism outcomes on the basis of new charges	Total sample (N = 286)	CP only (n = 135; 47%)	CP + nonviolent and/or violent offending (n = 90; 32%)	CP + contact sex offending (n = 61; 21%)	Significance
Any reoffense	110 (39)	33 (24)_a	44 (49)_b	33 (54)_b	$\chi^2(2, N = 286) = 21.6, p < .001, V = .275$
Any failure on conditional release (charge)	80 (28)	18 (14)_a	36 (40)_b	26 (43)_b	$\chi^2(2, N = 286) = 27.3, p < .001, V = .309$
Any violent reoffense (including contact sex)	23 (8)	6 (4)_a	9 (10)_a,b	8 (13)_b	$\chi^2(2, N = 286) = 5.0, p = .08, V = .132$
Any contact sexual reoffense	12 (4)	4 (3)_a	3 (3)_a	5 (8)_a	$p = .285^b$
Any historical contact child sex offense (i.e., previously undetected)	9 (3)	3 (2)_a	2 (3)_a	4 (7)_a	$p = .277^b$
Any child pornography reoffense	34 (12)	10 (7)_a	11 (12)_a,b	13 (21)_b	$\chi^2(2, N = 286) = 7.8, p = .02, V = .165$
Any sexual reoffense[a]	45 (16)	16 (12)_a	12 (13)_a	17 (28)_b	$\chi^2(2, N = 286) = 8.7, p = .01, V = .174$

Note. All values are *ns* (with percentages in parentheses). Each subscript letter denotes a subset of the row category whose column proportions do not differ significantly from each other at the $p <$ .05 level (using the Bonferroni method). [b] The Freeman–Halton extension of Fisher's exact test was calculated for a 2 × 3 contingency table in which one or more cells did not mean the expected minimum of 5.
[a] Includes new child pornography and noncontact and contact sex offenses.

legal criteria for child pornography, so the offender was warned but not charged.

Nine offenders had a new charge for a historical contact sexual offense (all against a child); these offenses were not counted in the recidivism analyses because they represented *pseudorecidivism*—that is, previously undetected offending that came to light after an index offense. These offenses represent new criminal justice actions for prior offending but do not represent new sexual crimes committed during the follow-up period. Of these nine offenders, seven also had a new offense (not necessarily sexual in nature).

Predicting Sexual Recidivism

Using the 5-year fixed follow-up analysis comprising 266 offenders, we created the CPORT by initially examining variables that were conceptually similar to established risk measure items from the Static-99 (Hanson & Thornton, 2000) and the Sex Offender Risk Appraisal Guide (Quinsey, Harris, Rice, & Cormier, 2006) as well as those based on previous research with child pornography offenders. On the basis of the univariate results reported in Table 5, we combined variables that would be relatively easy to code (e.g., "any criminal history" is easy to determine in comparison with "any juvenile criminal record," which might be sealed or expunged and thus unavailable).

The scoring was kept simple for ease of use and because exploratory analyses of more complicated item weightings did not increase predictive accuracy (see also Grann & Långström, 2007): (a) offender age at time of the index investigation, coded as higher risk if age 35 or younger (49% of the sample were higher risk); (b) any prior criminal history, coded as higher risk if *yes* (41% were higher risk); (c) any prior or index contact sexual offense history, coded as higher risk if *yes* (18% were higher risk); (d) any prior or index failure on conditional release such as probation, parole, or conditional release, coded as higher risk if yes (15% were higher risk); (e) indication of pedophilic or hebephilic interests, coded as higher risk if *yes* (40% were higher risk); (f) ratio of boy to girl content in child pornography, coded as higher risk if there was more ($\geq 51\%$) content depicting boys (15% were higher risk); and (g) ratio of boy to girl content in nudity and other child content, coded as higher risk if there was more content depicting boys (16% were higher risk).

Each of the seven CPORT items was summed, with total scores ranging from 0 to 7. For the full 5-year fixed sample, the mean CPORT score was 1.94 (*SD* = 1.57). CPORT score was a significant predictor of any recidivism (area under the curve [AUC] = .66, 95% confidence interval [CI] [.59, .73]), any sexual recidivism (AUC = .74, 95% CI [.63, .84]), and specifically contact sexual recidivism (AUC = .74, 95% CI [.55, .94]). The observed and predicted risk percentages across CPORT scores for the fixed 5-year follow-up are provided in Table 6. Goodness of fit (*p*) for this model was .81 (Hosmer–Lemeshow test). There were few offenders with high CPORT scores, so we combined scores ≥ 5 (6% of cases). The CPORT did not significantly predict sexual recidivism in the subgroup of offenders with only child pornography offenses (AUC = .63, 95% CI [.41, .86]) but did significantly predict sexual recidivism among child pornography offenders with other offending

Table 5

Predictors of Any Sexual Recidivism (5-Year Fixed Follow-Up)

Variable	Full sample (N = 266)[a]	CP only (n = 132; 50%)[b]	CP + nonviolent and/or violent offending (n = 86; 32%)[c]	CP + contact sex offending (n = 48; 18%)[d]	CP with no contact sex offending (n = 218; 82%)[e]
Demographic characteristics					
Age at time of index investigation (inverse)	.63* [.53, .73]	.58 [.42, .73]	.58 [.41, .76]	.78* [.61, .94]	.58 [.46, .69]
Age at time of index investigation: 25 or younger	.57 [.45, .69]	.50 [.30, .71]	.54 [.34, .73]	.70 [.50, .90]	.52 [.38, .66]
Age at time of index investigation: 35 or younger[f]	.61* [.51, .72]	.63 [.44, .82]	.54 [.35, .73]	.73* [.55, .90]	.58 [.45, .72]
Age at time of first criminal conviction (inverse)	.64 [.54, .75]	.58 [.42, .74]	.59 [.41, .78]	.67 [.48, .86]	.60 [.48, .73]
Age 30 or younger at first conviction	.61* [.50, .71]	.51 [.30, .72]	.58 [.40, .76]	.63 [.45, .81]	.57 [.44, .71]
Highest grade achieved (inverse)	.61 [.45, .73]	.55 [.28, .82]	.57 [.15, .98]	.68 [.46, .89]	.56 [.33, .79]
Single at index	.56 [.46, .67]	.57 [.36, .78] (inverse)	.57 [.39, .75]	All	.51 [.37, .65]
Substance use					
Alcohol use problems (yes/no)	.55 [.44, .65] (inverse)	None	.55 [.37, .73] (inverse)	None	.52 [.39, .66] (inverse)
Drug use problems (yes/no)	.54 [.42, .65]	None	.56 [.36, .76]	.50 [.31, .70]	.55 [.40, .70]
Any substance use problems (yes/no)	.50 [.39, .61]	None	.53 [.34, .73]	.59 [.41, .77] (inverse)	.54 [.39, .68]
Access to children at index					
Number of children in residence	.52 [.40, .63]	.54 [.33, .75]	.55 [.37, .74]	.53 [.33, .74] (inverse)	.54 [.40, .68]
Child in residence at index (biological or other)	.53 [.42, .64]	.61 [.40, .82]	.56 [.36, .75]	.54 [.35, .74]	.58 [.44, .72]
Works with or volunteers with children	.51 [.39, .62]	.56 [.34, .78]	None	.52 [.32, .72]	.50 [.35, .64]
Specific information about children	.55 [.43, .68]	None	.52 [.31, .73]	.59 [.39, .80]	.50 [.35, .65]
Sexual communication with child or UC online	.53 [.41, .64]	None	.52 [.34, .71] (inverse)	.57 [.37, .77]	.51 [.38, .65] (inverse)
Criminal history					
Any juvenile record	.60*,g [.47, .72]	None	.52 [.33, .72] (inverse)	.73* [.54, .92]	.50 [.36, .64]
Any prior criminal history[f]	.66* [.55, .77]	None	.58 [.40, .77]	All	.60 [.46, .74]
Total number of prior offenses	.67* [.56, .77]	.49 [.29, .69]	.67 [.50, .85]	.54 [.35, .73]	.63 [.48, .78]
Total number of prior sexual offenses (contact/noncontact)	.66* [.54, .77]	.49 [.29, .69]	.53 [.33, .73]	.66 [.50, .81]	.52 [.38, .67]
Any prior noncontact sexual offenses (including prior CP offenses)	.55 [.43, .67]	.49 [.29, .69]	.54 [.33, .75]	.53 [.33, .73]	.52 [.38, .67]
Any prior contact sexual offenses	.65* [.53, .77]	None	None	All	None
Any contact sexual offenses (preindex/index)[f]	.62* [.50, .74]	None	None	All	None
Failure on conditional release (preindex/index)[f]	.60*,g [.48, .72]	None	.55 [.34, .76]	.61 [.42, .81]	.57 [.42, .72]
Failure on conditional release (index)	.60*,g [.47, .72]	None	.60 [.39, .82]	.51 [.41, .82]	.56 [.41, .71]
Child pornography offending					
Ratio boy:girl in CP content	.67* [.56, .79]	.65 [.45, .84]	.64 [.44, .85]	.64 [.45, .83]	.64* [.50, .79]
More boy images in CP content[f]	.61* [.50, .73]	.57 [.35, .79]	.57 [.36, .77]	.62 [.43, .82]	.56 [.42, .71]
More boy nude images	.62* [.50, .74]	.57 [.35, .79]	.62 [.41, .82]	.62 [.41, .82]	.59*,g [.44, .74]
More boy other images	.59*,g [.48, .71]	.64 [.41, .86]	.51 [.32, .70]	.58 [.38, .78]	.57* [.42, .72]
More boy nude/other images[f]	.62* [.50, .74]	.63 [.41, .86]	.56 [.36, .76]	.61 [.42, .81]	.59*,g [.44, .74]
Ratio of younger:pubescent child images	.57 [.47, .66]	.64 [.50, .78]	.55 [.40, .70] (inverse)	.64 [.46, .83]	.53 [.42, .64]
Morphed images to make CP	.50 [.38, .60]	None	None	.53 [.33, .73]	None
Had CP anime	.52 [.41, .63]	.61 [.43, .79] (inverse)	.59 [.40, .79]	.51 [.32, .71] (inverse)	.50 [.36, .64]
CP organized (little to none vs. moderate to high)	.59 [.47, .71] (inverse)	.67 [.47, .87] (inverse)	.55 [.35, .75]	.64 [.45, .84] (inverse)	.54 [.39, .70] (inverse)

(table continues)

Table 5 (*continued*)

Variable	Full sample (N = 266)[a]	CP only (n = 132; 50%)[b]	CP + nonviolent and/or violent offending (n = 86; 32%)[c]	CP + contact sex offending (n = 48; 18%)[d]	CP with no contact sex offending (n = 218; 82%)[e]
CP on nonprivate computer	.50 [.39, .61]	.58 [.38, .78]	.53 [.34, .72] (inverse)	.51 [.31, .71]	.52 [.38, .66]
Had CP movie clips	.51 [.40, .62]	.61 [.43, .79]	.53 [.35, .72]	.54 [.35, .74] (inverse)	.56 [.43, .70]
Had child sex stories	.56 [.44, .67]	.53 [.33, .73] (inverse)	.58 [.39, .78]	.61 [.41, .82]	.54 [.39, .68]
Years collecting CP	.51 [.40, .63]	.56 [.40, .72] (inverse)	.59 [.42, .77] (inverse)	.72 [.54, .90]	.60 [.47, .72] (inverse)
Atypical sexual interests					
Admitted pedophilic/hebephilic interest to police	.60*[g] [.49, .71]	.55 [.34, .77] (inverse)	.55 [.36, .75]	.78* [.63, .94]	.51 [.37, .65]
Indication of pedophilic/hebephilic interest (diagnosed or admitted to police)[f]	.61* [.50, .72]	.56 [.35, .77] (inverse)	.55 [.35, .74]	.80* [.66, .94]	.50 [.36, .65]
Admitted pedophilic interest to police	.60*[g] [.48, .71]	.53 [.32, .75] (inverse)	.51 [.32, .70]	.81* [.66, .97] (inverse)	.51 [.37, .66] (inverse)
Admitted hebephilic interest to police	.64* [.51, .76]	.55 [.29, .80]	.57 [.37, .77]	.76* [.57, .95]	.57 [.42, .73]
Sexual violence indicative (sadism, rape)	.51 [.40, .62]	.54 [.35, .74] (inverse)	.61 [.41, .81]	.54 [.35, .73] (inverse)	.54 [.40, .69]
Fetish material indicative	.53 [.40, .66]	.53 [.26, .79]	.52 [.30, .74]	.57 [.35, .80]	.51 [.35, .68]
Sum of indicative paraphilic content	.57 [.47, .68] (inverse)	.53 [.42, .64] (inverse)	.58 [.39, .77] (inverse)	.52 [.32, .73] (inverse)	.56 [.42, .68] (inverse)

Note. All values are areas under the curve (AUCs) [with 95% confidence intervals in brackets]. We provide AUCs across all variables, including dichotomous variables, to allow for comparisons across items, acknowledging that AUCs will be reduced with dichotomous variables. We have calculated the odds ratios (ORs) for all dichotomous variables and will provide same to interested readers on request. "Inverse" indicates that we had to reverse the variable for the receiver operating characteristic analysis to allow for an assessment of risk. "All" indicates that all the offenders who committed a new sexual offense were positive for the variable. "None" indicates that none of the offenders who committed a new sexual offense were positive for the variable. UC = undercover police officer posing as a minor.
[a] Sexual recidivism: 29 offenders (11%). [b] Sexual recidivism: eight offenders (6%). [c] Sexual recidivism: 10 offenders (12%). [d] Sexual recidivism: 11 offenders (23%). [e] Sexual recidivism: 18 offenders (8%). [f] Part of the Child Pornography Offender Risk Tool. [g] Significant OR association at *p* < .05.
* *p* < .05.

Table 6

Observed and Predicted Recidivism Probabilities for the CPORT on the Basis of Cases With No Missing Items

CPORT score	Percentage and number of scores in sample		Observed recidivism rate		Predicted recidivism rate (probability estimate) on the basis of logistic regression[a]	
	%	n	Risk (%)	n	Risk (%)	n
0	16	43	2	1	2	1
1	27	72	4	3	5	3
2	24	63	11	7	9	5
3	13	35	11	4	15	5
4	9	24	21	5	26	6
≥5	6	17	47	8	40	7

Note. N = 254. CPORT = Child Pornography Offender Risk Tool.
[a] Hosmer–Lemeshow test for goodness of fit: *p* = .806.

(but no contact sexual offending) in their history (AUC = .69, 95% CI [.54, .83]) or with contact sexual offending histories (AUC = .80, 95% CI [.63, .96]).

The CPORT was relatively robust in terms of missing data. There were missing data for 11 offenders regarding sexual interests and for one offender regarding contact sexual offending history. Its AUC was only slightly higher (.76, 95% CI [.66, .85]) for the 254 cases with no missing items. We also examined a version of the CPORT excluding the items about child content other than child pornography and admission/diagnosis of sexual interest in children, on the assumption that these would be more likely to be missing information in clinical or correctional files. This compact version of the CPORT had AUCs of .73 (95% CI [.63, .83]) for the full sample, .64 (95% CI [.44, .84]) for child pornography–only offenders, .66 (95% CI [.49, .82]) for those with other criminal history (but not contact sexual offending), and .76 (95% CI [.58, .94]) for dual offenders.
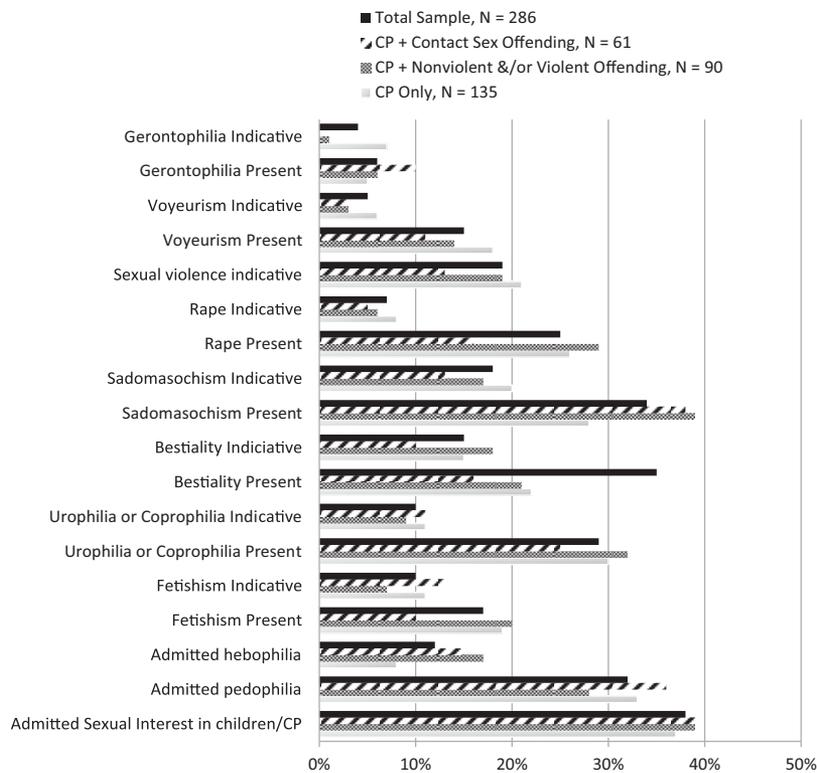

Figure 1. Details about sexual interests and behavior distinguishing child pornography (CP)–only offenders and CP offenders with other known criminal involvement either preindex or at index. Comparisons across offender groups are not significant at α ≤ .05.

Discussion

Summary of Results

Consistent with Eke et al. (2011), we found differences among child pornography offenders when they were classified according to their criminal history. These offenders differed in some demographic characteristics, including education level and occupation. In terms of their child pornography offending, dual offenders were more likely to have been charged with production offenses and more likely to have content depicting boys; they did not differ in the apparent ages of children depicted in their collections, however. Dual offenders also did not differ in their admission of sexual interest in children or in having other paraphilic pornography content. Child pornography–only offenders did not differ in the likelihood of residing or working with children, but they were less likely to have specific contact information about children or to have solicited children online.

In an average follow-up time of 8.3 years (*SD* = 2.5 years; range = 1.2–17.6 years), we observed a 16% sexual recidivism rate in the follow-up sample of 286 offenders, comprising new contact sexual offenses against a child (4%) or new child pornography offenses (12%). In the fixed 5-year follow-up of 266 offenders, we identified seven significant predictors of any sexual recidivism: (a) offender age at time of the index investigation, (b) any prior criminal history, (c) any contact sexual offending, (d) any failure on conditional release, (e) admission or diagnosis of sexual interest in children, (f) more boy than girl child pornography content, and (g) more boy than girl other child-related content.

Risk Factors for Sexual Recidivism

Some of these predictors replicated previous child pornography offender research, such as criminal history (e.g., Eke et al., 2011; Wakeling et al., 2011), and some were novel, particularly the ratio of child content depicting boys relative to girls. As we expected, these risk factors are consistent with established models of contact sexual offending that emphasize antisocial propensities (younger offender age, criminal history, conditional release failure) and atypical sexual interests (greater interest in boys than girls, as reflected in content; admissions/diagnosis of sexual interest in children; Hanson & Morton-Bourgon, 2005; Seto, 2008, 2013; Seto, Harris, Rice, & Barbaree, 2004; Seto & Lalumière, 2001).

We did not find significant associations for other factors that we expected to be predictive of sexual offending such as substance use problems and evidence of multiple paraphilic interests. Unlike Faust et al. (2009), we did not find marital status or having nondigital child pornography to be associated with sexual recidivism; we did find, however, that admission or diagnosis of pedophilia or hebephilia was predictive, which is indirectly related to Faust et al.'s item regarding pornography depicting adolescents versus younger children only.

CPORT

Combining seven significant predictors of sexual recidivism, we were able to create a structured checklist that significantly predicted any sexual recidivism or specifically contact sexual recidivism at a level similar to the accuracies obtained by risk scales

developed for contact sex offenders, such as the Static-99 (Hanson & Morton-Bourgon, 2009). This tool was not predictive for offenders only known to have child pornography offenses, which we attribute to the low base rate of sexual recidivism in this subgroup for the 5-year follow-up (6% compared with 12% for child pornography offenders with nonviolent or nonsexually violent offending histories or 23% for child pornography offenders with contact sexual offending histories), resulting in low statistical power to detect an association.

Although we report probability estimates for this development sample, cross-validation of the CPORT is needed to assess its use as an actuarial measure for child pornography offender sexual recidivism. Also, further validation with larger, independent samples and longer follow-up times could evaluate the generalizability of the CPORT or suggest improvements. The low base rates of sexual recidivism, especially contact sexual recidivism, found for child pornography–only offenders suggests that it would be difficult to validate a risk-assessment tool for this specific population. As with other sex offenders, treatment and supervision of child pornography offenders should be based on a comprehensive assessment of risk and other considerations (e.g., access to children) for each individual. Child pornography offenders with antisocial characteristics, emotional congruence or identification with children, or ideas supportive of sex with children may be considered in greater need with regard to risk management and treatment priorities.

Though more work is needed to cross-validate risk factors identified in this research and to examine other risk factor candidates not included in the current study, we believe the CPORT can be useful in the structured risk assessment of adult male child pornography offenders as a preferable alternative to unstructured risk judgments. Actuarial use of the CPORT involving application of the recidivism probabilities reported here is not recommended without further cross-validation. We expect that other established sex offender risk measures, such as the Static-99R, would also perform in a sensible way with child pornography offenders, perhaps with some modification (see Seto, 2013).

Some potential risk factors were not predictive in this study. For example, multiple paraphilic interests is a significant predictor of sexual recidivism among contact sex offenders (Mann, Hanson, & Thornton, 2010), but having pornography depicting multiple paraphilic themes was not predictive of sexual recidivism here. Part of the problem may be that we are inferring sexual interests from known pornography content, which might be downloaded because of sexual interest but might also be downloaded out of curiosity, accidentally (in the case of large transfers of pornography files), or for trading purposes only. A stronger test of this candidate factor would be to have self-report, physiological, or implicit measures of paraphilic sexual interests, which are all uncommon in police investigations but would be routine in a comprehensive clinical assessment. Forensic analysis of other pornography content—which was not the focus of the police investigations but could be done with the same techniques used to analyze child pornography content—could offset the limitations of offender self-report. Evidence that someone had frequently and recently accessed sadomasochistic pornography, for example, would suggest that the person was aware of this content and was interested in it.

We did not find significant associations for other proposed candidate risk factors (United States Department of Justice, 2010;

United States Sentencing Commission, 2012). We thought evidence that child pornography was organized would predict sexual recidivism, because organization suggests involvement with the content. Someone with organized child pornography might be more sexually preoccupied, and sexual preoccupation is a robust predictor of sexual recidivism among contact sex offenders (Hanson & Morton-Bourgon, 2005). Similarly, duration of collecting child pornography could reflect sexual preoccupation. Future research that directly assesses sexual preoccupations could shed more light on the role that this factor plays.

We thought that opportunity factors such as having children in the household, working or volunteering with children, communicating with minors online, or having specific child contact information without obvious reasons would be associated with sexual recidivism, because access to potential victims plays an important role in sexual offending (see Seto, 2008, 2013; Wortley & Smallbone, 2006), and access to children has been found to distinguish child pornography–only offenders from dual offenders (Babchishin, Hanson, & VanZuylen, 2015). One possible reason these opportunity factors were not predictive in this study is that they were recorded on the basis of information obtained at the time of offenders' arrest for the index offense. Circumstances were likely quite different following the index conviction, which is more germane to offending opportunities in the future. Also, offender access to children can be very fluid, short-term, or opportunistic (e.g., meeting a child socially). Few of these opportunities would be captured easily or reliably in file review research. Dynamically assessing access to children during the follow-up period is more relevant to understanding the role that this kind of opportunity plays in reoffending. The role of opportunity and access needs to be examined in future research using larger samples and measuring access to children contiguously (e.g., while on probation or parole supervision, while being followed in community treatment).

Limitations

A challenge for this study was the relatively small sample size combined with the low base rate of some candidate factors. We might have found, for example, that having specific information about children without obvious reasons was a significant predictor of sexual recidivism if having such information had been more common in this sample or if the sample had been substantially larger. Future research examining the CPORT could evaluate the generalizability of these findings and determine whether other variables can add to its predictive validity.

Police case files are rich sources of data, but, given their purpose and timing during the criminal justice process, they do not contain a lot of information on psychologically meaningful risk factors (Mann et al., 2010). Because of this, we relied on variables that are indicators or proxies for psychologically meaningful factors (e.g., as discussed earlier, pornography depicting other paraphilic themes). An important next step in research on child pornography offender risk and recidivism would be follow-up research using clinical data from offenders who have been comprehensively assessed on theoretically and empirically important domains. It would be necessary to obtain large samples and follow them for a long enough time given the expected low base rates of contact sexual recidivism (Seto et al., 2011).

Another limitation is that one of the CPORT items—admission or diagnosis of pedophilia or hebephilia—is vulnerable to self-report bias, because there are obvious reasons to lie about one's sexual interest in children. Additional ways to indirectly assess this factor by police investigators could be examined—for example, from computer records of chats with others online in which an individual admits to being sexually interested in children, which might be available from a police forensic analysis. However, we had objective information in this study about child pornography content and offending behavior, because we had access to information from forensic computer analyses of digital content, whereas many clinicians might only have secondhand or self-reports about these topics when assessing offenders.

These findings suggest that clinicians and police investigators should explicitly ask, if they are not doing so already, about such factors as the gender preferences of child pornography offenders or evidence of sexual preferences. Ideally, self-reports could be corroborated with objective information about child pornography activity, such as police or court documents describing collections. For example, large collections comprising mostly child pornography, with very little adult content, and evidence of recent accessing of child pornography files only would be suggestive of pedophilic or hebephilic sexual interests. This, in turn, would be facilitated by providing more details about child pornography content in official documents. Though this information is not necessary for the purposes of current laws, it could be very useful to professionals downstream.

Last, we relied on official records for recidivism, which are widely recognized to be underestimates of new offending (e.g., Seto et al., 2011). A relative strength of this study is that we could supplement national criminal records database information with police service occurrence reports, which also allowed us to separate pseudorecidivism from what we considered to be true recidivism (new criminal offenses committed after the index adjudication).

Future Directions

We believe the present results, which identify a set of risk factors for sexual recidivism, have clear policy implications for the risk assessment and management of child pornography offenders. There are systemic and individual costs of over- or understating risk to reoffend of child pornography offenders (see Aviv, 2013). As with other offenders, accurate risk assessment is necessary to inform important decisions about child pornography offenders, from sentencing to treatment to supervision. Further validation of risk measures, particularly dynamic risk measures that could guide treatment and supervision planning, would be an important contribution. Given the results we obtained for the CPORT, we expect that an established dynamic risk measure such as the Stable-2007 or Acute-2007 would have utility for this offender population as well (Hanson, Harris, Scott, & Helmus, 2007).

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