

**THE PREDICTIVE VALIDITY OF GENERAL AND OFFENCE-SPECIFIC RISK
ASSESSMENT TOOLS FOR CHILD PORNOGRAPHY OFFENDERS' REOFFENDING**

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ABSTRACT

Child pornography offenders (CPOs) are ever present in the criminal justice system, yet the research on this population of offenders is less advanced than in many other areas of corrections (Eke & Seto, 2012; Seto & Eke, 2005). In order to effectively manage CPOs, it is necessary to accurately assess their risk, and, where applicable, provide rehabilitation options targeted toward their criminogenic needs. The current study examined the both the Level of Service Inventory-Ontario Revision (LSI-OR) and a modified version of the Child Pornography Offender Risk Tool (CPORT-M) and their ability to predict child pornography (CP), sexual, violent, and general recidivism with a sample that included CPOs, other sexual offenders (SOs), and non-sexual offenders (NSOs), who are under the responsibility of the province of Ontario. The results from the ROC analyses that examined the LSI-OR with the recidivism variables, for the various groups of offenders, suggested that the LSI-OR has good predictive accuracy for general recidivism for all of the offenders, as well as good predictive accuracy of violent and sexual recidivism with only the SO and NSO groups. Further, it was found that the CPORT-M had good predictive accuracy for general recidivism among the CPOs. It is appropriate to use both the LSI-OR and the CPORT-M to assess risk of general recidivism with CPOs.

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DEDICATION

I would like to dedicate this thesis to my husband and best friend, Tyler, and to my parents, Janice and Paul.

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LIST OF ACRONYMS

ACP	Accessing Child Pornography charges
ANOVA	Analysis Of Variance
AUC	Area Under the Curve
CI	Confidence Intervals
COMPAS	Correctional Offender Management Profiling for Alternative Sanctions
CP	Child Pornography
CPF	Child Pornography- Film/video charges
CPIC	Canadian Police Information Center
CPO	Child Pornography Offenders
CPORT	Child Pornography Offender Risk Tool
CPORT-M	Child Pornography Offender Risk Tool-Modified
CPP	Child Pornography-Publishing charges
CPPO	Child Pornography-Possession charges
CPS	Child Pornography-Selling/distributing charges
CSO	Contact Sexual Offender
HCR-20	Historical, Clinical, Risk management scale
LCE	Luring Children less than Eighteen years of age charges
LCF	Luring Children less than Fourteen years of age charges
LCS	Luring Children less than Sixteen years of age charges
LS/CMI	Level of Service/Case Management Inventory
LSI	Level of Service Inventory
LSI-OR	Level of Service Inventory-Ontario Revision
LSI-R	Level of Service Inventory-Revised
MCMI-III	Millon Multi-axial Clinical Inventory
MCSCS	Ministry of Community Safety and Correctional Services\
MSO	Most Serious Offence
NSO	Non-Sexual Offenders
OGRS3	Offender Group Reconviction Scale 3
OTIS	Offender Information and Tracking System

PCL-R	Psychopathy Checklist-Revised
PCL-SV	Psychopathy Checklist: Screening Version
RM2000	Risk Matrix 2000
RM2000/c	Risk Matrix 2000/overall risk classification
RM2000/s	Risk Matrix 2000/sexual recidivism
RM2000/v	Risk Matrix 2000/violent recidivism
RNR	Risk, Need, and Responsivity theoretical framework
ROC	Receiver Operator Characteristics
SO	Sexual Offenders (excluding CPOs)
SD	Standard deviation
SEXI	Sexual Interference of children under 16 years of age charges
SIR	Statistical Information on Recidivism scale
SPSS	Statistical Package for the Social Sciences
SSPI-2	Screening Scale for Pedophilic Interests - revised
VASOR	Vermont Assessment of Sex Offender Risk
VRS-SO	Violence Risk Scale – Sexual Offender version
YLS/CMI	Youth Level of Service/Case Management Inventory

1.0 INTRODUCTION

What is child pornography? What essentially seems like a simple, straightforward question becomes problematic as there is no standardized legal definition because views about children and child pornography are bound to moral, cultural, social, and religious beliefs, resulting in definitions that differ across cultures, countries, and even within the same country (Houtepen, Sijtsema, & Bogaerts, 2014). For example, in some countries (e.g., Australia, United Kingdom) a child is defined as a person under 16 years of age, whereas in other countries (e.g., Canada) a child is defined as a person under 18 years of age (Burke, Sowerbutts, Blundell, & Sherry, 2002). As a consequence, images of children that are deemed pornographic in one country may actually be lawful in the country of origin (Burke et al., 2002). Furthermore, views about what constitutes child pornography and child pornography offending may vary greatly in academic research (e.g., different inclusionary criteria), resulting in problems with the generalization of findings and the comparability of results across studies (Houtepen et al., 2014). This study adopted a Canadian focus because the sample of offenders used were Canadian and the study occurred in a Canadian context; therefore, international research on child pornography offenders (CPOs) was not sought after.

The definition of child pornography that is used for this study was taken from the *Canadian Criminal Code*. Child pornography is defined as any visual depiction, including any photograph, film, video, or picture, that is made or produced by electronic, mechanical, or other means, of sexually explicit conduct (i.e., engaged in explicit sexual activity and/or the dominant characteristic of the depiction, for a sexual purpose, is the sexual organ or the anal region) that involves a person who is, or is being depicted as, being under the age of eighteen years (*Criminal Code*, 1985). As well, the *Canadian Criminal Code* states that child pornography can also include any written material, visual representation, or audio recording that advocates, counsels, describes, or presents sexual activity with a person under the age of eighteen years (*Criminal Code*, 1985).

There are four child pornography offences in Canada which include making, distributing, possessing, and accessing child pornography (*Criminal Code*, 1985). All four child pornography offences are treated seriously and result in incarceration terms. Individuals convicted of either

making and/or distributing child pornography are guilty of an indictable offence and liable to imprisonment for a minimum of one year up to a maximum term of 14 years; whereas, individuals convicted of either possessing and/or accessing child pornography are guilty of an indictable offence and liable to imprisonment for a minimum of one year to a maximum term of ten years (*Criminal Code*, 1985). Individuals convicted with either of the latter two charges can also receive a summary conviction resulting in imprisonment for a minimum term of six months to a maximum term of two years less a day (*Criminal Code*, 1985). Therefore, CPOs are individuals who are convicted of possessing, accessing, distributing, and/or producing child pornography.

Criminal activity by CPOs is typically conducted through the use of the Internet and does not involve direct (known) contact with a child (Seto, Babchishin, Wood, & Flynn, 2012). The advent of the Internet has increased the production, consumption, and dissemination of child pornography (Ray, Kimonis, & Seto, 2014; Seto & Eke, 2014). Although there have been CPOs in the past, the Internet and more specifically, Internet sexual offending, has resulted in an influx of Internet sexual offenders in the courts, prisons, and probation services (Eke & Seto, 2012; Webb, Craissati, & Keen, 2007). In Canada, Boyce (2015) indicated that, although there has been a decrease in the majority of *Criminal Code* violations (excluding traffic) between 2013 and 2014, the rate of police-reported violations increased for child pornography. Specifically, in 2014, the number and rate of child pornography incidents rose from approximately 2,800 incidents in 2013 to about 4,000 incidents in 2014, resulting in a 41% increase over one year (Boyce, 2015).

1.1 Child Pornography Offender (CPO) Characteristics

Research on the characteristics of CPOs is inconsistent and some characteristics (e.g., cognitive distortions) have been understudied and are not well understood, as this research is still in the early phases; however, there is consensus regarding some CPO characteristics (Houtepen et al., 2014). Even so, a few characteristics reported in the literature are debatable in that a characteristic that may be found to be reflective of CPOs in one study, but the opposite may be found in another study (e.g., high victim empathy in one study versus low victim empathy in another study; Henry, Mandeville-Norden, Hayes, & Egan, 2010). A brief examination of the demographic, psychological, and psychosexual characteristics that have been reported in the

literature on CPOs will be discussed. It is important to note that CPOs are not a homogenous group of individuals and, therefore, the characteristics that will be provided below are not reflective of all offenders. Further, there is no literature specifically available on female CPOs that the author is aware of; thus, the characteristics provided are reflective of male CPOs.

1.1.1 Demographic Characteristics.

It has been found that CPOs are male and most often Caucasian and between 25-50 years of age (Babchishin, Hanson, & Hermann, 2011; Burke et al., 2002; Seto & Eke, 2015; Webb et al., 2007). They are also likely to be employed (Burke et al., 2002; Neutze, Seto, Schaefer, Mundt, & Beier, 2011; Seto & Eke, 2015), are above average in intelligence (Burke et al., 2002; Neutze et al., 2011; Seto, Cantor, & Blanchard, 2006; Seto & Eke, 2014; Seto et al., 2012), and have high levels of educational attainment (Burke et al., 2002; Neutze et al., 2011; Seto & Eke, 2015; Seto et al., 2012). However, Ray et al. (2014) found no significant differences between CPOs and other pornography consumers with respect to age, minority status, or educational status. They explained that their findings may be due to their sample, which consisted of all pornography consumers. Further, CPOs are most often single (Babchishin et al., 2011; Neutze et al., 2011; Seto & Eke, 2015) and unlikely to have ever lived with a romantic partner (Seto et al., 2012; Webb et al., 2007). Moreover, when in relationships, they tend to have low relationship stability (Seto et al., 2012) and low empathy (Henry et al., 2010).

1.1.2 Psychological Characteristics.

It has been found that CPOs are more likely to suffer from or have a history of mood disorders (e.g., depression; McCarthy, 2010) and anxiety-related problems (e.g., obsessive compulsive disorder; Bourke & Hernandez, 2009). Many CPOs also have a past history of childhood abuse (Babchishin et al., 2011; McCarthy, 2010; Webb et al., 2007), have low self-esteem (Henry et al., 2010), score high in sensation seeking (Ray et al., 2014), and exhibit cognitive distortions (e.g., justifying, minimizing, and rationalizing behaviours; Bourke et al., 2009; Houtepen et al., 2014; Quayle & Taylor, 2002).

1.1.3 Psychosexual Characteristics.

Psychosexual characteristics that are commonly shared among CPOs have also been cited in the literature. Past research revealed that CPOs display high sexual preoccupation (Houtepen et al., 2014; Seto et al., 2012); have a sexual preference for children (Bourke et al., 2009; Ray, et

al., 2014; Seto, 2010; Seto et al., 2006); and exhibit highly sexual deviant behaviours (Babchishin et al., 2011; Seto et al., 2012) and arousal (Seto et al., 2006; Quayle & Taylor, 2002). In addition, it has been reported (e.g., Seto et al., 2006; Seto & Eke, 2014; Seto, Stephens, Lalumiere, & Cantor, 2015) that child pornography offending can be a diagnostic indicator of pedophilia (i.e., having a sexual attraction/interest in prepubescent children; American Psychological Association, 2000). Indeed, Seto et al. found that CPOs were more likely to show a pedophilic pattern of sexual arousal during phallometric testing (which held true, regardless of whether or not the CPOs had contact sexual offences against child victims) compared to other groups of offenders.

1.2 CPO Typology

To highlight the heterogeneity in CPOs, researchers (Henry et al., 2010; Houtepen et al., 2014) have recently begun to develop typologies that characterize the different motivations and behaviours. Building onto past research, Henry et al. (2010) used cluster analysis to classify CPOs into three clusters including: the ostensibly normal, the emotionally inadequate, and the sexually deviant. The ostensibly normal offenders were more emotionally stable, had less pro-criminal attitudes, and scored higher in social desirability than the other two groups. In contrast, the emotionally inadequate offenders were characterized by socio-affective difficulties, low self-esteem, emotional loneliness, and impulsivity, but were not high in pro-criminal attitudes. Lastly, the sexually deviant offenders were characterized by poor victim empathy but did not have scores showing general cognitive distortions regarding children and sex.

Similarly, Houtepen et al. (2014), basing his typology on previous research, described that CPOs can be classified into four basic categories. The first category includes periodically prurient offenders who access child pornography impulsively or out of curiosity, as part of a larger interest in pornography. The second type identified includes fantasy-only offenders who access and/or trade child pornography in order to find gratification for their sexual interest in children, but do not have a known history of child sexual abuse. Houtepen et al. hypothesized that these two types of offenders differ because periodically prurient offenders have more risk factors related to their psychological characteristics, whereas fantasy-only offenders have more risk factors related to their psychosexual characteristics. The last two types of CPOs identified were direct victimization and commercial exploitation offenders, which are child sexual abusers

whose offences directly involve children (Houtepen et al., 2014). Direct victimization and commercial exploitation offenders will not be examined in my study.

1.3 Comparison of CPOs to Other Sexual Offenders

Empirical evidence supports both similarities and differences between CPOs and other sexual offenders (Babchishin et al., 2011). It is important to note that although comparing CPOs with other types of sexual offenders on relevant characteristics is informative, it is limited in at least two respects: first, results may not generalize to the broader population of CPOs who are not involved with the criminal justice system; and second, these characteristics may not speak to important differences that exist between these offenders (Ray et al., 2014). An examination of the differences and similarities that have been reported in the literature between CPOs, solicitation offenders, and contact sexual offenders (CSOs) will be discussed.

1.3.1 Solicitation Offenders.

Solicitation offenders are offenders who are convicted of online solicitation (i.e., using the Internet or related technologies to communicate with minors for sexual purposes and to possibly arrange real-life meetings) and are known as luring or traveling offenders (Seto et al., 2012). Seto et al. (2012) found that CPOs tend to be older than solicitation offenders and participate in child-oriented activities (i.e., activities where children are present) at higher frequencies than solicitation offenders. As well, they also found that CPOs had greater deviant sexual preferences (as assessed by the Stable 2007; Hanson, Harris, Scott, & Helmus, 2007) and sex drive/preoccupation than solicitation offenders. Interestingly, CPOs had lower self-reported use of child pornography compared to solicitation offenders (Seto et al., 2012).

1.3.2 Contact Sexual Offenders (CSOs).

CSOs are offenders that have been convicted of contact sexual offences against children (Seto et al., 2012). In comparison to CSOs, CPOs are more likely to be: younger (Babchishin et al., 2011; Webb et al., 2007); better educated; more intelligent; employed; and in a relationship (Burke et al., 2002). However, Seto et al. (2012) found that CPOs tend to be older than CSOs. Webb et al. (2007) stated that CPOs tend to be predominantly White, compared to CSOs, who come from more mixed ethnicities. CPOs have also been found to participate in child-oriented activities at higher frequencies than CSOs (Seto et al., 2012).

In comparison to CSOs, CPOs reported more psychological difficulties in adulthood, are less likely to be under the influence of drugs and/or alcohol at the time of the offence, have significantly more problems with sexual self-regulation, and lower levels of psychopathy and social desirability (Webb et al., 2007). Babchishin et al. (2011) found that CPOs experienced less physical abuse in childhood compared to CSOs and rates of childhood sexual abuse were not significantly different between the two offender groups. In addition, CPOs were found to have higher levels of self-control compared to CSOs (Seto et al., 2012; Seto, Hanson, & Babchishin, 2011). CPOs have also been found (e.g., Babchishin et al., 2011; Elliot, Beech, Mandeville-Norden, & Hayes, 2009) to have higher victim empathy and higher sexual deviance than CSOs, as well as fewer problems with substance abuse and lower antisocial tendencies (e.g., withdrawn, rejection of personal responsibility, impulsivity). Further, Bates and Metcalf (2007) found that in comparison to CSOs, CPOs were lower in emotional identification with children, empathy deficits for children, and offence supportive attitudes and beliefs but were higher in emotional loneliness.

Seto et al. (2012) found that CPOs had greater deviant sexual preferences and sex drive/preoccupation than CSOs. They also found that CPOs had significantly higher risk than CSOs, according to their risk scale scores on the modified Static-99 scale. However, CPOs were less likely to sexually reoffend against a child compared to CSOs (Seto et al., 2012; Seto et al., 2011). Further, CPOs reported fewer prior sexual convictions and dropped out of treatment and recidivated at significantly lower rates compared to CSOs (Webb et al., 2007). Overall, CSOs who committed a prior contact sexual offence were most likely to recidivate, generally or sexually, compared to CPOs (Seto & Eke, 2005).

1.4 CPOs and their Risk of Widening their Sexual Offending

An interest in the literature is whether CPOs will eventually offend against children. For example, researchers (e.g., Eke & Seto, 2012; Eke, Seto, & Williams, 2011; Seto & Eke, 2014; Seto et al., 2011; Webb et al., 2007) stated that a main concern with offenders who look at or collect child pornography includes whether or not they have a history of contact sexual offending, and whether or not they will sexually assault a child in the future. To address this concern, Seto et al. (2011) conducted two meta-analyses. The first included 21 studies and found that one in eight CPOs had an official criminal record for a contact sexual offence and

approximately one in two admitted to committing a contact sexual offence. Thus, more offenders disclosed contact sexual offences when using self-report methods to obtain this data, which is consistent with observations (e.g., many crimes go unreported) that official records only provide conservative estimates (Seto et al., 2011). In the second meta-analysis, Seto et al. examined recidivism over a follow-up period of approximately six years; they found that 4.6% of CPOs had committed a new sexual offence: only 2% committed a contact sexual offence and 3.4% committed another child pornography offence. They concluded that child pornography, alone, is not a risk factor for contact sexual offences and that the recidivism rates they observed are substantially lower than recidivism rates found for CSOs (i.e., approximately 14%; Hanson & Hanson, 2004).

Houtepen et al. (2014) indicated that, apart from the sexual interest, a prerequisite for crossing over from child pornography offences to contact offences includes the willingness to engage in behaviours that may cause direct harm to children and having low victim empathy. Furthermore, Long, Alison, and McManus (2013) indicated that some risks for cross-over include having access to children, engaging in grooming behaviours (e.g., gaining trust from parental figures to have unsupervised time with their child), producing child pornography, and having a prior criminal record, even for a nonsexual offence. In addition, CPOs may have more indecent images of children compared to other sexual offenders but they tend to have a smaller proportion of pictures that illustrate penetrative acts committed on children and have a higher proportion of images displaying erotic poses with no sexual activity depicted or images of nonpenetrative sexual activity between children (Long et al., 2013). Seto (2015) indicated that pedophilia alone is not a sufficient explanation for contact sexual offending.

In order to assess CPOs risk of reoffending, a brief discussion of risk assessments, risk factors and risk assessments with CPOs, and the risk assessment tools of interest for the study will follow.

1.5 Risk Assessment

Risk assessment is a field of inquiry and practice concerned with predicting whether an offender will reoffend in the future (Andrews & Bonta, 2010). Otherwise, it refers to the probability that an individual will engage in harmful/antisocial behaviour based on known risk factors/characteristics relating to the individual (Bartol & Bartol, 2011). Risk factors can be

classified into static and criminogenic need/dynamic risk factors. Static risk factors are fixed characteristics of an individual that cannot be changed, such as an offender's criminal history (Andrews & Bonta, 2010). In contrast, criminogenic need/dynamic risk factors (e.g., substance abuse) are characteristics of an individual that can be changed over time and, therefore, are targeted through treatment to reduce recidivism. The most important dynamic/criminogenic risk factors to reduce recidivism are known as the "central eight" which include a history of antisocial behaviour, antisocial personality pattern, antisocial attitudes, antisocial associates, family and/or marital, school and/or work, leisure and/or recreation, and substance abuse (Andrews & Bonta, 2010; Andrews, Bonta, & Wormith, 2006; Olver, Stockdale, & Wormith, 2014). Within the central eight risk factors, a history of antisocial behaviour, antisocial personality pattern, antisocial attitudes, and antisocial associates are considered the "big four" (Olver et al., 2014). These four risk factors are the strongest predictors of criminal recidivism among the central eight.

Risk assessments provide correctional agencies with the level of risk that an offender poses to the community, as well as appropriate targets for change (Latessa & Lovins, 2010). Risk assessments are important for numerous reasons: they help identify offenders most at risk for recidivating; identify risk and criminogenic need factors; guide decision making by providing more information in a systematic manner; reduce bias by following objective criteria; improve the placement of offenders and the utilization of resources; and enhance public safety (Latessa & Lovins, 2010). In addition, risk assessments allow for an examination of an offender's changes in risk overtime (Latessa & Lovins, 2010).

Risk assessments are used across a wide range of correctional settings including: courts for pretrial decisions, sentencing decisions, and during revocation hearings; probation and parole agencies for determining levels of supervision, placement in programming, and release decisions; and provincial and federal corrections for classifying offenders' risk, placement in programming, and determining which offenders should be granted early release (Latessa & Lovins, 2010). Examples of some commonly used risk assessment tools are the Statistical Information on Recidivism Scale (SIR; Nuffield, 1982), the Correctional Offender Management Profiling for Alternative Sanctions (COMPAS; Brennan & Oliver, 2000), the Level of Service Inventory-Revised (LSI-R; Andrews & Bonta, 1995) and the Level of Service/Case Management

Inventory (LS/CMI; Andrews, Bonta, & Wormith, 2004), and the Violence Risk Scale – Sexual Offender version (VRS-SO; Wong, Olver, Nicholaichuk, & Gordon, 2003).

Assessment tools in corrections can be categorized into three domains: screening instruments, comprehensive risk/need assessment tools, and specialized tools (Latessa & Lovins, 2010). Screening instruments assess primarily static factors (e.g., criminal history), are quick and easy to use, and are useful for in or out decisions (e.g., detain, release on recognizance) and sorting offenders into risk categories (Latessa & Lovins, 2010). Comprehensive risk/need assessment tools assess all of the major risk and need factors (e.g., the central eight), take longer to administer, and require more extensive training for those administering such tools (Latessa & Lovins, 2010). These tools produce levels of risk/needs that are correlated with outcome measures (e.g., recidivism) and are useful in case management of offenders, recommending treatments/programming, and reassessing changes in risk overtime (Latessa & Lovins, 2010). Finally, specialized tools are defined as instruments that assess specific domains (e.g., substance abuse) or specialized populations (e.g., sexual offenders) and should be used in conjunction with comprehensive risk/need assessment tools (Latessa & Lovins, 2010).

1.6 Risk Factors for CPOs

Many of the characteristics identified for CPOs, that have been previously mentioned are also their risk factors and, despite individual differences, many offenders have difficulties with one or multiple risk domains (Houtepen et al., 2014). For example, static risk factors for CPOs include prior criminal history or never living with a romantic partner (Seto & Eke, 2014; Seto et al., 2012). More recently, Seto and Eke (2015) identified seven significant risk factors among CPOs for any sexual recidivism which included: offender age at time of the index offence; prior criminal history; any contact sexual offending; any failure on conditional release; admission or diagnosis of sexual interest in children; more boy child pornography content; and more boy other child-related content.

As with all types of offenders, having a prior criminal record significantly increases the chances of reoffending for CPOs (Seto & Eke, 2015; Seto & Eke, 2014; Seto & Eke, 2005). However, the literature on CPOs prior criminal history reports conflicting findings. For example, Burke et al. (2002) stated that CPOs have no prior criminal records and other researchers (e.g., Seto et al., 2012; Seto et al., 2011) found that they are unlikely to have past

prior contact offences. Alternatively, in Webb et al.'s (2007) study, some CPOs had a few previous sexual convictions, and Bourke et al. (2009) found that in their sample of CPOs, a large portion were significantly more likely than not to have sexually abused a child. Likewise, Eke et al. (2011) conducted a study with 541 CPOs and reported that about half of their sample (47%; 253 offenders) also had prior criminal charges. When examining this sample's prior criminal history: 40% had a nonviolent offence history, 27% had a violent offence history, 18% had a prior contact sexual offence history, and 21% had both nonviolent and violent offences in their history. Looking at their child pornography index offences: 454 (84%) offenders were convicted of possession; 84 (15%) of distribution; 66 (12%) of making; and 9 (2%) of accessing child pornography (percentages add up to greater than 100% due to offenders having multiple convictions). Similarly, Seto and Eke (2015) found that 39% of their sample of 301 CPOs had a prior criminal history, 8% had a juvenile record, 15% had a prior sexual offence, and 5% had a prior child pornography offence. In their sample, 99% of the CPOs were convicted of possessing child pornography, while 21% were convicted of producing, 38% for distributing, and 14% had a concurrent sexual offence. Overall, more research found that CPOs were more likely to have a prior criminal history.

Some dynamic risk factors for CPOs include: relationship stability; sex preoccupation/drive; deviant sexual preference; deviant sexual arousal; and distorted cognitions (Seto & Eke, 2014; Seto et al., 2012). Faust, Renaud, and Bickart (2009) found 30 potential risk factors in their sample of 870 CPOs which included lower education, being single, having non-Internet child pornography, prior sexual offender treatment, and not having depictions of adolescent minors were all significant predictors of sexual rearrest. Interestingly, substance abuse and evidence of multiple paraphilic interests were not predictors of sexual offending among CPOs (Seto & Eke, 2015).

Sexual recidivism rates for CPOs are significantly lower than general recidivism rates (Eke et al., 2011; Seto & Eke, 2005; Wakeling, Howard, & Barnett, 2011). For example, Eke et al. (2011) conducted a study that examined 541 CPOs from Ontario's Sex Offender Registry and found that about a quarter of their sample (32%) was sanctioned for a failure on conditional release, which is similar to what has been found previously, and their sexual recidivism rate was

11%. As well, Faust et al. (2009) found sexual rearrest rates of 5.7%, with their sample of 870 CPOs assessed by the Federal Bureau of Prisons, over a 3.8 year follow up time.

1.7 Risk Assessment for CPOs

There has been tremendous progress in the assessment of sexual offenders' risk to the community (Wormith, Hogg, and Guzzo, 2012a); however, this is not the case for CPOs. Although empirical research on risk factors and recidivism of CPOs has been growing over the last few years, the risk assessment tools for this offender population are less advanced but are slowly gaining traction (Eke et al., 2011). However, it has been suggested (e.g., Eke et al., 2011; Seto and Eke, 2015; Seto & Eke, 2014) that, in the absence of risk assessment tools for this population of offenders, established risk measures can be modified to rank CPOs according to risk of recidivism. This has been the case with most of the tools used with CPOs which will be discussed. Eke et al. explained that risk assessments for this population are critical because of the rise in child pornography cases. Also, accurate risk assessment is necessary to inform important decisions about CPOs, ranging from sentencing to treatment to supervision (Seto & Eke, 2015). Some of the risk assessment tools that have been used with CPOs include: Risk Matrix 2000 (RM2000; Thornton et al., 2003); Millon Multi-axial Clinical Inventory (MCMI-III; Millon, Millon, & Davis, 1994); Psychopathy Checklist: Screening Version (PCL-SV; Hart, Cox, & Hare, 1995); Stable-2000/Acute-2000 (Hanson & Harris, 2001); Offender Group Reconviction Scale 3 (OGRS3; Howard, Francis, Soothill, & Humphreys, 2009); Stable-2007 (Hanson et al., 2007); the Modified Static-99 (modified by removing victim-related factors; Hanson & Thornton, 2000); the Vermont Assessment of Sex Offender Risk (VASOR; McGrath & Hoke, 2002); and the Revised Screening Scale for Pedophilic Interests (SSPI-2; Seto et al., 2015).

Over an 8-month period, Webb et al. (2007) assessed a wide range of background data from 210 participants (90 Internet sexual offenders and 120 child molesters), including information gathered from psychometric measures (i.e., RM2000, MCMI-III, PCL-SV, and Stable-2000/Acute-2000) to determine risk and personality traits. The RM2000 is a static risk assessment tool used to predict sexual reconviction in sexual offenders and is widely used in sexual offender populations in England and Wales (Thornton et al., 2003). Next, the PCL: SV is a 12-item scale derived from the Psychopathy Checklist-Revised (PCL-R), which is a measure of personality often associated with violent risk, and is used to screen for psychopathy in forensic

settings and to assess and diagnose psychopathy outside of forensic settings (Hart et al., 1995). In addition, the MCMI-III is a 175-item self-report instrument used for the clinical assessment and diagnostic screening of individuals who evidence problematic emotional and interpersonal symptoms and provides the prevalence of symptoms typical of Axis I disorders (Millon et al., 1994). Lastly, the Stable-2000/Acute-2000 is a standardized method for measuring change in sexual offender risk levels over time: the Stable-2000 assesses dynamic factors (e.g., significant social influence, intimacy deficits, sexual self-regulation, pro-sexual assault attitudes) and the Acute-2000 assesses factors such as opportunities for victim access, emotional collapse, hostility, substance abuse, sexual preoccupation, to name a few (Hanson & Harris, 2001). All standardized measures used in their study have established normative data and adequate reliability and validity. Webb et al. cautioned that all instruments were not designed for measuring risk with CPOs.

Webb et al. (2007) found that the scores of the RM2000 may be reasonably representative of a sexual offending population due to the spread of risk scores across four risk categories (low, medium, high, and very high), but found no significant differences between CPOs and child molester scores. However, the RM2000 significantly predicted formal failure in the community for child molesters but not for the CPOs. With respect to the Stable-2000, compared to CPOs, child molesters rated higher on the risk domains including more problems with both attitudes towards sexual assault and cooperation with supervision. However, CPOs were rated as having significantly more problems with sexual self-regulation, compared to the child molesters. Further, the Stable-2000 significantly predicted formal failure in the community for child molesters, but not for the CPOs. However, the Stable-2000 was able to significantly predict those who were likely to engage in general sexually risky behaviour (e.g., further pornography use) among the CPOs. Webb et al. also found that child molesters obtained higher scores on the Acute-2000, but, this difference was not significant between the two groups. When examining the results on the MCMI-III, there were no significant differences between the CPOs and child molesters on the MCMI-III, with the exception of child molesters scoring significantly higher on the desirability scale. Furthermore, the results from the PCL: SV revealed that child molesters were rated as having higher levels of psychopathy compared to the CPOs.

In another study, Wakeling et al. (2011) examined the predictive validity of four actuarial risk assessment tools (three RM2000 scales and OGRS3) with a sample of 1,344 Internet offenders in England and Wales to establish their accuracy in predicting sexual, violent, sexual and violent, and general reoffending. As previously mentioned, the RM2000 is the most widely used static risk assessment tool in the UK and is used with individuals who have been convicted of a sexual offence. The three RM2000 scales used were: RM2000/s which predicts sexual recidivism and is comprised of seven items which translate into four risk categories (low, medium, high, and very high); RM2000/v which predicts violent reoffending and is composed of three items and again, translates into four risk categories; and RM2000/c which combines the scores from the two previous RM2000 scales to produce an overall risk classification that predicts sexual and nonsexual violent reoffending. The OGRS3 was also used in their study and it is an actuarial predictor of general reoffending and includes only static risk factors (e.g., sex, criminal history; Howard et al., 2009).

All tools used in Wakeling et al.'s (2011) study were found to have moderate to very good predictive accuracy when used to predict the outcome that they were designed for with the Internet offenders. The predictive accuracy was measured using receiver operating characteristics (ROC) statistics and all appeared to be very good at predicting violent reconvictions (areas under the curve between .67 and .87). However, the RM2000/s, RM2000/c, and OGRS3 were the best predictors of sexual reoffending ($AUC = .67, .66, .65$, respectively), whereas the RM2000/v was very good at predicting nonsexual violent reoffending ($AUC = .87$ [but a wide 95% confidence interval]). Overall, the RM2000/c ($AUC = .87$) and OGRS3 ($AUC = .86$) were very good for predicting violent reoffending; the RM2000/c ($AUC = .71$) was the best predictor of sexual and/or violent reoffending; and the OGRS3 ($AUC = .70$) was the best predictor of general reoffending. The authors concluded that risk assessment tools for use with Internet offenders are needed and more research, with larger sample sizes and longer follow-up periods, needs to be conducted before firm conclusions can be made regarding the accuracy of these tools with this population.

Seto et al. (2012) used actuarial risk measures (i.e., Modified Static-99, VASOR, and Stable-2007) in their study where they compared lower risk CSOs, CPOs, and solicitation offenders on socio-demographic variables, psychological variables, risk factors, and long-term

risk of sexual recidivism. They modified the Static-99 by scoring it without victim related items, including only seven non-victim items (offender age at release or anticipated onset of risk to reoffend; ever lived with a lover for at least two years; any nonsexually violent index convictions; any prior nonsexually violent convictions; number of prior charges or convictions for sexual offences; prior sentencing dates; and any convictions for noncontact sexual offences). This provided them with a static risk score. Further, the VASOR was also used in their study and it is a 13-item structured risk assessment guide for adult male sexual offenders that is designed to assess the likelihood of sexual recidivism, violence risk, and offence severity, producing three risk categories: low, moderate, and high (Seto et al., 2012). Lastly, the Stable-2007 assesses dynamic risk factors of CSOs and they used five (sex drive/preoccupation, deviant sexual preference, cooperation with supervision, capacity for relationship stability, and emotional identification with children) of its 13 items in their study.

Seto et al. (2012) found that the three offender groups were similar on many of the dynamic risk factors assessed by the Stable-2007, with the exception of capacity for relationship stability, sex drive/preoccupation, and deviant sexual preferences. CPOs had more problems with all three of these factors compared to the other two offender groups (Seto et al., 2012). CSOs also were significantly lower risk on the modified Static-99 compared to CPOs and solicitation offenders. As well, CPOs and solicitation offenders had significantly lower scores than CSOs on all three scales of the VASOR. The solicitation offenders were similar or lower in risk than CPOs on both the modified Static-99 and the VASOR. Overall, all three groups of offenders were low in risk for sexual recidivism. Seto et al. concluded that differences between groups on the Static-99 and the VASOR were inconsistent. They cautioned that these risk measures were not developed nor were they validated with CPOs. Therefore, their results must be used with caution. Additionally, they indicated that the Static-99 manual explicitly stated that the measure is not intended for offenders charged solely with possession of child pornography offences.

Lastly, Seto et al. (2015) examined whether child pornography offending would add to the criterion-related validity of the original Screening Scale for Pedophilic Interests (SSPI; Seto & Lalumiere, 2001), using a revised version (SSPI-2), with a sample of 950 offenders with child victims. The original SSPI is a structured rating scale of four child victim characteristic items,

where a higher score indicates an offender who is more likely to have pedophilic sexual arousal and to sexually reoffend (Seto et al., 2015). The SSPI was revised (SSPI-2) with the addition of a fifth item, child pornography offences, to assess pedophilic sexual interest among contact or noncontact sexual offenders with child victims. Importantly, only CPOs who were charged with producing child pornography with children were included in their sample. They found that the SSPI-2 was related to phallometrically assessed sexual arousal to children and outperformed the original SSPI. However, as previously mentioned, this tool can only be applicable to CPOs charged with producing child pornography; thus, the tool is not applicable to the various other types of CPOs.

Overall, the majority of the tools were not predictive for CPOs (with the exception of the Stable-2000) or provided inconsistent results, leading the researchers to conclude that a risk assessment tool for this population was needed. As well, none of the previously mentioned tools assessed risk of CP recidivism. To date, only one tool has been developed for CPOs. Very recently, Seto and Eke (2015) introduced the structured risk checklist, named the Child Pornography Offender Risk Tool (CPORT). The first of its kind, it shows promise with this population of offenders. The CPORT is one of the risk assessment tools of interest for this study

1.8 Child Pornography Offender Risk Tool (CPORT)

The CPORT is used to predict any sexual recidivism among adult male offenders with a conviction for child pornography offences (Seto & Eke, 2015). The seven items that make up the checklist include: offender age; prior criminal history; any contact sexual offending; any failure on conditional release; admission or diagnosis of sexual interest in children; more boy child pornography content; and more boy other child-related content. The sample with which they developed the instrument included 266 convicted adult male CPOs.

Seto (2015) explained that the items indicating higher risk include: younger offender age (49%), prior criminal history (41%), and evidence of pedophilic (i.e., prepubescent children) or hebephilic (i.e., pubescent children) sexual interests (40%). These items were followed by: any prior contact sexual offending (18%), more boy other child-related content (16%), any prior conditional release failure (15%), and more boy child pornography content (15%).

Seto and Eke (2015) found that the CPORT significantly predicted general recidivism ($AUC = .66$), any sexual recidivism ($AUC = .74$), and contact sexual recidivism ($AUC = .74$) at

levels similar to the accuracies that are obtained by other risk scales (e.g., Static-99) developed for CSOs. Moreover, Seto (2015) found that the predictive accuracy of the CPORT was still moderate ($AUC = .73$) even when missing either the child content items or admission of pedophilic/hebephilic sexual interests from their checklist. For the purposes of this study, a similar version of the CPORT will be used and referred to as the CPORT-Modified, in order to differentiate it from the full scale version.

Unfortunately, the CPORT was not predictive of sexual recidivism with offenders only known to have child pornography offences ($AUC = .63$, 95% CI [.41, .86]) but it did significantly predict sexual recidivism among CPOs with other offending (but not contact sexual offending) in their history ($AUC = .69$, 95% CI [.54, .83]) or with contact sexual offending histories ($AUC = .80$, 95% CI [.63, .96]; Seto & Eke, 2015). The authors explained that this could be attributed to the low base rate of sexual recidivism in the group of offenders over a five year follow-up (6% compared with 12% for CPOs with nonviolent or nonsexual violent offending histories or 23% for CPOs with contact sexual offending histories), resulting in low statistical power to detect an association, and which may suggest that it could be difficult to validate a risk assessment tool for this specific population. Regardless, Seto and Eke (2015) recommended that use of the CPORT as a structured risk assessment of adult male CPOs is the preferable alternative to unstructured risk judgements. The authors concluded that the CPORT was significantly associated with any sexual recidivism, with moderate predictive accuracy, and has promise in the risk assessment of adult male CPOs with further cross-validation.

Beyond the risk assessment tools that have been used to date thus far with CPOs, there are other risk assessment tools that may be promising instruments for predicting risk with this population. One such tool, the Level of Service Inventory-Ontario Revision (LSI-OR; Andrews, Bonta, & Wormith, 1995), has been used to successfully assess the risk of sexual offenders in general (Wormith et al., 2012a). It is currently the risk assessment that is used with my sample of offenders and is the second risk assessment tool of interest for this study.

1.9 Level of Service Inventory-Ontario Revision (LSI-OR)

The Level of Service Inventory (LSI) is a popular actuarial criminogenic risk/need assessment tool that has been adopted by numerous local, state, and provincial jurisdictions in Canada, the United States, the United Kingdom, and elsewhere (Flores, Lowenkamp, Holsinger,

& Latessa, 2006; Gendreau, Little, & Goggin, 1996; Girard & Wormith, 2004; Wormith, 2011). In fact, the LSI has been stated to be the most frequently used risk assessment tool internationally, employed by parole and probation offices, prisons, hospitals, forensic examiners, and courts around the globe (Olver et al., 2014; Wormith, 2011; Wormith, Hogg, & Guzzo, 2015). The original LSI has generated several subsequent versions (e.g., LSI-R, LS/CMI, LSI-OR), including youth versions (e.g., YLS/CMI; Girard & Wormith, 2004; Wormith et al., 2015).

The LSI scale and its subsequent versions fit within the risk, need, and responsivity (RNR) theoretical framework. The first principle relates to the risk that an offender poses to reoffend. Those offenders who have a higher risk of recidivating should be provided the most intensive interventions when compared to the lower risk offenders (Franklin, 2010). Otherwise, the principle of risk refers to matching service intensity to the risk level of the client (Olver et al., 2014). Next, the need principle refers to targeting criminogenic needs (e.g., the central eight) for intervention (Olver et al., 2014). A criminogenic need consists of a subset of dynamic risk factors that, when changed, is associated with a change in the chance that an offender will recidivate (Andrews, Bonta, & Hoge, 1990). The third principle is the concept of responsivity, which refers to matching offenders to different styles and modes of service to optimize learning (Andrews et al., 1990). This principle includes both general (i.e., use of cognitive behaviourally based interventions) and specific (i.e., tailoring service delivery to features [e.g., cognitive ability, culture]) responsivity characteristics of the client (Olver et al., 2014).

The LSI-OR is currently used in Ontario's provincial corrections and probation services. This tool is the same as the more widely known and used tool, the LS/CMI (Andrews et al., 2004). It is theoretically grounded in social learning theory (Franklin, 2010) and is an empirically developed risk/need assessment tool used to predict an offender's risk of recidivating (Girard & Wormith, 2004). The tool consists of: a general risk/need section assessing the central eight dynamic risk factors (43 items); a specific risk/need section used to identify additional risk factors and criminogenic needs (23 items); and three additional sections (i.e., institutional factors [10 items], other client issues [18 items], and special responsivity considerations [8 items]) which facilitate case management (Wormith & Hogg, 2012). The resulting scores determine an offender's initial risk level (Wormith & Hogg, 2012; please refer to the methods section for a detailed description of the LSI-OR).

The predictive validity of the LSI-OR has not been conducted with CPOs. However, the LSI-OR has been used with sexual offenders. For example, Girard and Wormith (2004) assessed the predictive validity of the LSI-OR on general and violent recidivism among various offender groups (e.g., sexual offenders, domestic violent offenders). The correlations that they found for the sexual offenders (.44 for general recidivism and .31 for violent [including sexual] recidivism) were comparable to the correlations found for the non-sexual offenders (NSOs). They further concluded that the LSI-OR compared favourably to other specially designed instruments for sexual offenders. Wormith et al. (2012a) also described unpublished research conducted by Vrana, Sroga, and Guzzo (2008) that examined the LSI-OR and risk of recidivism in a sample of 198 sexual offenders in Ontario, which found that the LSI-OR correlated with both general and violent recidivism (.41 and .32, respectively; sexual recidivism rates were too low so its correlation with risk was not computed).

Additionally, the predictive validity of the LSI/CMI has been examined with sexual offenders. For example, Wormith et al. (2012a) investigated the predictive validity of the LS/CMI with 1,905 sexual offenders in Ontario. Here, the LS/CMI predicted general recidivism, violent recidivism and sexual recidivism for their sample of sexual offenders. The correlations with general recidivism were higher for the sexual offenders on all domains (with the exception of substance abuse) and the specific risk/need section and both of its subscales were highly correlated with general recidivism for sexual offenders. They concluded that general risk/need assessment instruments (e.g., LSI-OR) are appropriate with specialized offender populations as demonstrated by the predictive validity coefficients that were found to be comparable between the offender groups.

Furthermore, Olver et al. (2014) conducted the largest and most recent meta-analysis on the Level of Service scales and their results supported the predictive accuracy of the LSI scales and their criminogenic need domains for general and violent recidivism overall, and among broad subgroups of interest, including females and ethnic minorities. Again, these results demonstrate that general risk/need assessment tools are appropriate for various subgroups of offenders.

1.10 Present Study

In order to effectively manage CPOs, it is necessary to accurately assess their risk, and, where applicable, to provide rehabilitation options targeted toward their criminogenic needs. Although CPOs are ever present in the criminal justice system, the research on this population of offenders is less advanced than in many other areas of corrections (Seto & Eke, 2005; Webb et al., 2007). Further, child pornography has become a global crisis and is driven, in part, by the fact that it is a lucrative commodity. Yet, despite international attention and collaboration, it is an unfortunate fact that less is known about CPOs than many other types of offenders (Bourke et al., 2009).

The present study will examine the predictive accuracy of the Level of Service Inventory-Ontario Revision (LSI-OR) with a sample of CPOs who are under the responsibility of the province of Ontario. The study will examine general, child pornography, violent, and sexual recidivism. The analyses will be conducted with CPOs, other sexual offenders (SO; excluding CPOs), and NSOs, in order to compare the performance of the LSI-OR with CPOs to the larger mainstream segment of the offender population for whom the instrument was originally intended. Importantly, a unique aspect of the current study will be comparing the offender groups (previously discussed) separately for offenders that were incarcerated versus those that were in the community (these analyses are provided in Appendices D and E). It is hypothesized that the LSI-OR will be best able to predict general recidivism among all groups of offenders. It is also predicted that the LSI-OR will have moderate predictive validity with respect to child pornography recidivism among the CPO group.

In addition, the present study will examine the predictive accuracy of the newly introduced structured risk checklist, the CPORT, on various types of recidivism with the CPO sample. However, the data used for the present study will not allow for an examination of all seven predictors from the checklist. Therefore, only an analysis of offender age, prior criminal history, any contact sexual offending, any failure on conditional release, and admission or diagnosis of sexual interest in children will be examined. The two remaining predictors more boy rather than girl child pornography content and more boy than girl other child-related content from the checklist will be excluded. This modified version of the CPORT, CPORT-M, is hypothesized to have moderate predictive accuracy on sexual recidivism and weak predictive

accuracy on child pornography recidivism for the CPOs, as Seto (2015) found that the predictive accuracy of the CPORT was still good ($AUC = .73$) even when missing either the child content items or admission of pedophilic/hebephilic sexual interests from their checklist.

The predictive accuracies of both the LSI-OR and the CPORT-M will be compared to each other and the convergent validity will be assessed in order to determine the most appropriate tool to be used with this sample of offenders. To equate these comparisons, only the performance of the LSI-OR with the CPO group will be considered. The present study will provide new empirical information on the predictive accuracy of the LSI-OR and the individual items of the tool across a variety of criminal behaviours, such as general, child pornography, violent, and sexual reoffending for all groups of offenders. As the only risk assessment tool that has been specifically designed for use with CPOs, this study also aims to further cross-validate the predictive accuracy of the CPORT (using a modified version) with this group of offenders. Finally, the present study aims to provide information on the appropriateness of both tools that will advance correctional programming, policies, and practices, with respect to CPOs.

2.0 METHODOLOGY

2.1 Participants/Sample

Participants included provincial offenders who were under the responsibility of Ontario's Ministry of Community Safety and Correctional Services (MCSCS). The initial cohort included all male and female offenders who were released from custody, or were sentenced to a conditional sentence, or began a probation or intermittent sentence over two calendar years, 2010 and 2011, and had been administered an LSI-OR in conjunction with their sentence. The original dataset consisted of 90,781 (77,790 community and 12,991 custody) cases. However, many offenders appeared more than once for various reasons (e.g., having more than one LSI-OR assessment, appearing in both custody and community datasets). To reconcile this, an offender's first release from custody or first admission to conditional or probation or intermittent sentence, whichever was earlier, was used to screen out duplicates. In addition, for offenders who had more than one LSI-OR assessment on file, the first assessment was chosen to screen out duplicates, resulting in each offender being represented only once in the dataset.

The total sample included 72,726 offenders, consisting of 64,089 (88.1%) community offenders and 8,637 (11.9%) custody offenders. The community offenders consisted of 55,976 (87.3%) offenders on probation and 8,113 (12.7%) offenders on conditional sentences. There were 60,087 (82.6%) males and 12,615 (17.4%) females. The gender of 24 offenders was not recorded. The majority of the offenders were Caucasian ($N = 45,816$; 69.2%), while 5,988 (9%) were Aboriginal, 5,841 (8.8%) were Black, 1,863, (2.8%) were South Asian, 1,212 (1.8%) were East Asian, 998 (1.5%) were West Asian/Arabic, 897 (1.4%) were Hispanic, 864 (1.3%) were Southeast Asian, 1,698 (2.6%) were other minority, 801 (1.2%) were unknown, and 252 (0.4%) declined to specify. Race/ethnicity information was unavailable for 6,496 offenders.

The total sample was divided into three subsamples. CPOs were offenders who had been convicted of any child pornography (CP) offence(s) as part of their current, or 'index,' offences. CP offences included accessing child pornography (ACP), film or video charges of child pornography (CPF), publishing child pornography (CPP), possessing child pornography (CPPO), and selling or distributing child pornography (CPS). A total of 281 (0.4%) of the total sample were CPOs, consisting of all males. Among the CPOs, 209 (74.4%) were charged with only one

CP offence, while 64 (22.8%) were charged with two, six (2.1%) were charged with three, and two (0.7%) were charged with four offences. The type of CP offence the offenders were charged with included 43 for ACP, five for CPF, 14 for CPP, 223 for CPPO, and 53 for CPS. The majority of the offenders were Caucasian ($n = 236$; 87.1%), while eight (3.0%) were Aboriginal, four (1.5%) were South Asian, three (1.1%) were Hispanic, two (0.7%) were Southeast Asian, two (0.7%) were East Asian, two (0.7%) were Black, 13 (4.8%) were unknown, and one (0.4%) declined to specify. The data were missing for ten offenders.

The second group consisted of other sexual offenders (SOs) and were identified by those offenders who had non-violent and violent sexual offences (excluding CP index offences) which was indicated by the most serious offence (MSO) category in the Ministry database. A total of 1,572 (2.2%) of the total sample were SOs, consisting of 1,540 (98%) males and 31 (2%) females. These data were missing for one offender. The majority of the offenders were Caucasian ($n = 1,005$; 69.8%), while 125 (8.7%) were Aboriginal, 98 (6.8%) were Black, 53 (3.7%) were South Asian, 48 (3.3%) were unknown, 30 (2.1%) were other minority, 28 (1.9%) were Hispanic, 24 (1.7%) were East Asian, 14 (1%) were West Asian/Arabic, ten (0.7%) were Southeast Asian, and five (0.3%) declined to specify. These data were missing for 132 offenders.

The third group consisted of NSOs (i.e., offenders who did not have a CP index offence or did not have a MSO category that included either non-violent or violent sexual offences). There were 70,873 offenders or 97.5% of the total sample in this subsample. The NSOs included 58,266 (82.2%) males and 12,584 (17.8%) females. Gender information was unavailable for 23 offenders. The majority of the offenders were Caucasian ($n = 44,575$; 69.1%), while 5,855 (9.1%) were Aboriginal, 5,741 (8.9%) were Black, 1,806 (2.8%) were South Asian, 1,186 (1.8%) were East Asian, 984 (1.5%) were West Asian/Arabic, 866 (1.3%) were Hispanic, 852 (1.3%) were Southeast Asian, 1,668 (2.6%) were other minority, 740 (1.1%) were other/unknown, and 246 (0.4%) declined to specify. This information was missing for 6,354 offenders.

Overall, the total sample included 72,726 (281 CPO, 1,572 SO, 70,873 NSO) offenders. All female offenders and offenders that had missing data were removed from the offender groups to assist in keeping the subsamples comparable, as there were no females in the CPO sample. This resulted in a sample of 60,087 offenders that was comprised of: 281 CPOs, 1,540 SOs, and

58,266 NSOs. Additionally, 3,707 (6.2% of the sample) community offenders that recidivated were dropped from the analyses because their LSI-OR assessment date occurred after their recidivism date; resulting in the final sample of 56,380 offenders that was comprised of: 279 (0.5%) CPOs, 1,511 (2.7%) SOs, and 54,590 (96.8%) NSOs.

2.2 Materials/Measures

2.2.1 Offender Information and Tracking System (OTIS).

All data were extracted from Ontario's MCSCS Offender Information and Tracking System (OTIS) through their statistical reporting system. The MCSCS uses the computerized file system of OTIS to maintain all offender records and includes information that is used to manage an offender from the beginning until the end of their sentence. Examples of the type of data collected included: demographic variables (e.g., gender, date of birth, race); variables related to the index sentence and admission (e.g., sentence length, offence, most serious offence, sentence start date); CP variables (i.e., making, distributing, possessing, and accessing child pornography); LSI-OR variables (e.g., total score, risk level, override risk levels); and recidivism variables (please see below).

2.2.2 LSI-OR.

An automated version of the LSI-OR was introduced into the MCSCS in 1997 which allowed staff to enter all details of their assessments into an electronic record for scoring and record keeping (Wormith, Hogg & Guzzo, 2012b). The LSI-OR is administered to all adult offenders who are sentenced to custody and to all probationers and parolees in Ontario (Andrews et al., 1995). The LSI-OR is readily available from its publisher (Multi-Health Systems) and is widely known and used internationally as the LS/CMI (Andrews et al., 2004; Wormith, 2011). A considerable body of literature (e.g., Andrews & Bonta, 1995; Flores et al., 2006; Gendreau et al., 1996; Girard & Wormith, 2004; Hogg, 2011; Olver, Stockdale, & Wormith, 2014; Wormith, Hogg, & Guzzo, 2015) has demonstrated that the LSI and its subsequent versions are reliable and valid risk assessment tools that demonstrate predictive validity with various offender subgroups (e.g., women, Aboriginal offenders, sexual offenders).

The tool includes a general risk/need section which consists of 43 items that are organized into the central eight subscales: criminal history (8 items), procriminal attitude/orientation (4 items), antisocial patterns/cognitions (4 items), companions/associates (4

items), family/marital (4 items), education/employment (9 items), leisure/recreation (2 items), and substance abuse (8 items; Wormith & Hogg, 2012). These items are scored dichotomously (0 = not present; 1 = present) and the information is gathered from file reviews and client interviews, which are totalled to create eight domain scores and a total general risk/need score (Wormith & Hogg, 2012; Girard & Wormith, 2004). Scores are used to determine an offender's initial risk level on a five-point ordinal scale ranging from very low risk to very high risk (Wormith & Hogg, 2012). Specifically, total scores of zero to four correspond with very low risk, five to ten with low risk, 11 – 19 with medium risk, 20 – 29 with high risk, and 30 – 43 with very high risk (Orton, 2014). As well, a strength score (i.e., a strength or protective factor for the offender) can be derived from the simple summation of strengths across the central eight domains (Andrews et al., 2004). In other words, any of the eight subscales where offenders do not have risk factors are considered strength factors and a total strength score can be created for each offender ranging from zero to eight (Orton, 2014). In addition, there are provisions within the instrument that allow for a clinical override of the initial risk level, in either direction, to create a final risk level (Girard & Wormith, 2004; Wormith & Hogg, 2012).

The LSI-OR also has a specific risk/need section that contains two subscales, personal problems with criminogenic potential (14 items) and history of perpetration (9 items), which is scored dichotomously, as described above (Girard & Wormith, 2004). These scales are used to identify additional risk factors and criminogenic needs and guide assessors as to whether they should override the initial risk level (Wormith & Hogg, 2012). There are three additional sections which facilitate case management: institutional factors (10 items; records problems and management issues during previous incarceration), other client issues (18 items; includes social, health, and mental health issues), and special responsivity considerations (8 items; includes characteristics such as ethnicity, cognitive disabilities, and personality features; Wormith & Hogg, 2012). All electronic LSI-OR variables (e.g., total score, initial risk, override risk) were collected.

2.2.3 CPORT – Modified (CPORT-M).

The CPORT (Seto & Eke, 2015) is a seven item (i.e., offender age; prior criminal history; any contact sexual offending; any failure on conditional release; admission or diagnosis of sexual interest in children; more boy CP content; and more boy other child-related content) structured

risk checklist to predict sexual recidivism among CPOs. In order to score the CPORT, Seto (2015) indicated that offender age at time of the index investigation is coded as higher risk if age 35 or younger. Any prior criminal charges (whether sexual or not in nature) is coded as higher risk if yes, irrespective of the outcome, but does not include self-reported crimes or counting offences resulting in index charges. Any prior or index contact (or attempted contact) sexual offence history is coded as higher risk if yes, irrespective of the outcome, and includes index charges for contact sexual offending but not self-reported crimes. As well, any prior or index failure on conditional release such as probation, parole, or conditional release is coded as higher risk if yes. Furthermore, any indication/admission of pedophilic or hebephilic sexual interests is coded as higher risk if yes, including admission of sexual arousal to corresponding CP. Seto indicated that this item includes evidence of a past diagnosis but cannot be inferred from an analysis of CP searches and/or content. The ratio of boy to girl content in CP is coded as higher risk if there was more boy content (i.e., content meeting the legal definition and excludes child nudity or general child content). Also, the ratio of boy to girl content in nudity and other child content (excluding CP content) is coded as higher risk if there were more content depicting boys. These dichotomous items (yes/no) are summed with no weights, so possible scores range from 0 to 7 (Seto, 2015).

The OTIS database only allowed for an examination of the predictive validity of the CPORT with the sample of CPOs using the first five items. Thus, this modified version of the CPORT (CPORT-M) does not include the items, more boy child pornography content and more boy other child-related content. Seto (2015) indicated that these two items (more boy CP content and more boy other child-related content) were not found to be as predictive as the other items in the CPORT. The variables of interest for the CPORT-M including offender age, prior criminal history, any contact sexual offending, any failure on conditional release, and admission or diagnosis of sexual interest in children were extracted for the 279 CPOs through the available information (e.g., case notes) on OTIS.

Offender age for the CPORT-M was calculated from an offender's remand start date (where available) or their sentence start date and was coded as higher risk if they were 35 years of age or younger. Secondly, prior criminal history was collected from the available information on OTIS and only included offences that resulted in a conviction and were coded as higher risk if

yes; therefore, remand warrants that did not result in a conviction were not selected as a prior offence. In addition, any contact sexual offending was coded as higher risk if yes, and included any of the contact sexual offences that were deemed relevant from the *Criminal Code* and are listed in Appendix A. For any failure on conditional release, this variable was coded as higher risk if yes. Further, any indication/admission of pedophilic or hebephilic sexual interests was coded as higher risk if yes and was determined if an offender was charged with any of the following offences: luring children less than eighteen years of age (LCE); luring children less than sixteen years of age (LCS); luring children less than fourteen years of age (LCF); and sexual interference of children under 16 years of age (SEXI). These dichotomous items (yes/no) were summed with no weights, so possible scores range from 0 to 5.

2.2.4 Recidivism.

Recidivism was the outcome variable of interest in the current study and was defined as an offender being returned to custody or community supervision following their release from custody or for an offence for which they were convicted during or following a community sentence. Recidivism information was collected from OTIS, which documents all criminal offences that occur in Ontario. Thus, any offences committed in other provinces or were processed by means of diversion (e.g., alternative measures) were not included. This measure of recidivism was readily available in the database and was practical to use; whereas, a more comprehensive recidivism measure (e.g., the Canadian Police Identification Centre (CPIC) which would have captured recidivism across Canada) would have been too time consuming to gather and beyond the scope of the timeframe for this research. Nine measures of recidivism were used from the extracted data. Four of these were the primary recidivism variables (i.e., CP, sexual, violent, and general) used throughout the study and were chosen based on past research, while the remaining recidivism variables were used to provide descriptive information. The four primary variables were dichotomous (0 = no, 1 = yes) and identified those who did or did not recidivate during the follow-up period (on average, approximately 3 years) and constituted four recidivism variables employed in the study. Importantly, sexual recidivism also included all of the CP recidivists, while violent recidivism included only sexual recidivists who were charged with violent sexual offences, thus, it did not include the CP recidivists. General recidivism

captured all of the recidivists, including CP, sexual, and violent recidivists as well as other types of recidivism, such as DWI recidivism.

The time to recidivate or lapse time, which was represented by the number of days from an offender's release date until the date of reoffence or re-entry into custody or start of a community sentence (for the custody sample) and the number of days from their LSI-OR assessment date to the date of reoffence (for the community sample), was also collected. This represented the fifth recidivism variable.

The follow-up period for the custodial offenders who recidivated could be as early as January 1, 2010 or as late as July 1, 2014, with the follow-up period varying for each offender based on the release date. The follow-up period for the community offenders who recidivated ranged from January 1, 2010 until December 31, 2013, with the follow-up period varying for each offender based on their LSI-OR assessment date. A follow-up variable was created which included all offenders. Specifically, the follow-up for the custody offenders was calculated by subtracting the follow-up date (i.e., July 1, 2014) from their release date and for the community offenders, the follow-up date (i.e., December 31, 2013) was subtracted from their LSI-OR assessment date. The mean follow-up time for all offenders was 1,091 days ($M = 1091.19$; $SD = 234.56$) or approximately 3 years. When examining the offender groups separately, the mean follow-up time for the offender groups were similar but the CPO group ($M = 1160.35$; $SD = 254.51$) had the longest follow-up periods in comparison to the SO ($M = 1131.71$; $SD = 247.15$) and NSO ($M = 1089.71$; $SD = 233.94$) groups.

Next, the reoffence severity level, which includes 26 categories of offences that are rank ordered according to the mean sentence length for each offence category (Ontario, 1983), was collected. Hogg (2011) indicated that offence severity levels can be used to differentiate between violent and non-violent offences. She stated that this measurement is critical because it is important to know the manner in which offenders are recidivating and can be used to determine if the offence severity differs between the assigned risk levels among offenders. These offences were reverse coded so that higher scores represent higher offence severity levels (refer to Appendix C for a description of the reverse coded offence severity levels). An offender's offence severity level was the sixth recidivism variable in the study. To create the dichotomous sexual and violent recidivism variables that were previously discussed, the offence

severity categories were manipulated such that the violent recidivism variable was created by combining six offence severity categories of violence (i.e., assault and related offences; miscellaneous offences against the person; weapons offences; violent sexual offences; serious violent offences; and homicide and related offences) and the sexual recidivism variable was created by combining two offence severity categories of sexual offences (i.e., non-violent and violent sexual offences).

Recidivism information regarding any CP re-offence (i.e., ACP, CPF, CPP, CPPO, and CPS) for all the offenders was extracted to examine CP recidivism; constituting the seventh recidivism variable. Finally, the eighth and ninth recidivism variables included the type of disposition sentence (e.g., probation, custody) that the offenders received for recidivating and the sentence length of the new offence.

2.3 Procedure

All offenders who had served and were released from a custodial sentence in 2010 and 2011 or who were admitted to a conditional sentence or probation in 2010 and 2011 and had been administered an LSI-OR were identified electronically from the MCSCS's OTIS. All personal identifiers were removed before the data was transferred from the Ministry and offenders were all designated a unique case number. The data was collected for all offenders through OTIS including descriptive information, admission and sentence information, LSI-OR information, and recidivism information. The data from the custody and the community files were merged by offender case number.

In addition, data that identified offenders who had received index and recontact CP charges were extracted from OTIS. This data file was merged with the first two data files by case number and sentence start date, creating a single data file for analysis. Once all three files were merged, the data was screened for outliers, data entry errors, and missing data. Next, offenders that appeared more than once in the database were removed so that an offender only appeared once in analyses. Further, the offence severity category levels were reverse coded so that higher scores corresponded with higher severity levels.

The CP variables were used to create CPO and NSO groups. Whereas, the offence severity categories were used in the NSO group to create a SO sample. A dichotomous variable of CP recidivism was created from a variable that specifies recontact CP offences and both the

violent and sexual recidivism variables were created according to the recoded recontact offence severity category levels previously mentioned.

The data for the CPORT-M that was extracted from OTIS were merged into this database by CPO case number. These new variables were summed to create a total risk score on the CPORT-M to be used for analyses. The final data file included descriptive information, admission and sentence information, LSI-OR information, the nine measures of recidivism, and the variables of interest for the CPORT-M.

2.4 Statistical Analyses

The statistical analyses for this study were conducted using the IBM Statistical Package for the Social Sciences (SPSS). Descriptive statistics (e.g., frequencies, means, and standard deviations) were obtained to describe characteristics (e.g., age, race, disposition type, sentence length) of the CPOs, SOs, and NSOs (as well as for the three custody and three community samples), as well as the characteristics within the CPO sample by offence type (e.g., CPPO, CPS). Further, descriptive statistics were conducted for the sexual offence variable captured by the MCSCS, all of the LSI-OR variables, all of the recidivism variables (including the specific CP recontact offences such as ACP), the follow-up variable, survival time, and the CPORT-M variables for the CPOs, SOs, and NSOs (including the three custody and three community samples). Thus, although the focus of the current study was on CPOs, analyses were conducted with the various offender groups for both the community and custody samples to examine the similarities and differences that exist between the samples.

One-way analysis of variances (ANOVAs) were used to measure differences between the means that were obtained. Specifically, one-way ANOVAs were conducted for: age, initial offence severity level, total days served, initial sentence length, all of the LSI-OR variables, CP recontact offences, recontact total CP offence, lapse time, new offence severity level, new sentence length, and the risk override variable between the three offender samples (CPO, SO, and NSO), as well as for the three custody and three community samples. Post hoc tests using Tukey were also conducted along with the one-way ANOVAs to assess the significant differences in the means among the offender groups.

Chi-squares were also used to measure significant differences between the categorical variables. Specifically, chi-squares were conducted for race, the sexual offence variable, and the

disposition type between the three offender samples (CPO, SO, and NSO), as well as for both the three custody and three community samples. Chi-squares and their corresponding contingency tables were also performed for the four primary recidivism variables (i.e., general, CP, sexual, and violent), to analyze the initial risk level and the final risk level, and for the CPORT-M variables, for the three offender samples, including the three custody and community samples.

Survival analysis using Cox regression assessed the mean survival time for all offender groups (including custody and community samples) for all four primary recidivism variables.

Predictive validity was assessed with correlations and receiver operator characteristics (ROC; Hanley & McNeil, 1983). Correlations were utilized to assess relationships for the LSI-OR variables (e.g., general risk/need factors total score, total strength score, initial risk level, final risk level after the override, central eight total scores) and the CPORT-M variables between the four primary recidivism variables for the three offender samples, including the three custody and community samples.

As well, ROC analyses generated area under the curve (AUC) values which were used to examine how well the LSI-OR variables predicted general, CP, sexual, and violent recidivism for the three offender samples including the three custody and three community offender groups. As well, predictive validity analyses using ROCs to generate AUC values were used to examine how well the CPORT-M predicted the four types of recidivism among the CPOs. Recidivism rates were examined as a function of the CPORT-M total scores and CPORT-M risk levels were created by examining these recidivism rates. The findings from the LSI-OR and CPORT-M were compared against each other by examining the correlations and AUC values obtained. To further investigate the two tools, binary logistic regression analyses were conducted for the individual items of the CPORT-M and the LSI-OR to assess which items predicted recidivism.

Finally, the convergent validity (i.e., the agreement between measures of the same construct [e.g., risk of recidivism] that is assessed by different tools [e.g., LSI-OR versus CPORT-M; Guo, Aveyard, Fielding, & Sutton, 2008]) between the CPORT-M and the LSI-OR was analyzed using correlations.

2.5 Ethical Approval

Ethical approval for the study was obtained from both the MCSCS and the University of Saskatchewan. The research agreement with the MCSCS commenced on January 19, 2015 and

ethical approval was granted by the University of Saskatchewan's Behavioural Research Ethics Board on November 4, 2015.

3.0 RESULTS

The proportion of each of the three groups of offenders who were in custody and the community is presented in Table 1. Interestingly, most of the offenders were serving community sentences, with the exception of the CPOs. The CPO sample had a slightly higher percentage of offenders serving custodial sentences compared to community sentences, 56.3% versus 43.8%, respectively. This was not surprising as the *Criminal Code of Canada* stated that the child pornography offences are treated seriously and usually result in incarceration terms. Further, a large proportion of the community offenders received probation and only a small minority of offenders were serving intermittent sentences: four (1.4%) CPOs, 14 (0.9%) SOs, and 429 (0.8%) NSOs. For the purposes of the study, offenders serving intermittent sentences were included under the umbrella of “community” as they served the majority of their time in that context. Analyses were conducted separately for the three custody offender groups and the three community offender groups. These results can be found in Appendices D and E.

Table 1.

Total number of offenders by offender group and disposition type

Disposition Type	CPO (n=279)	SO (n=1511)	NSO (n=54590)	Total Sample (N=56380)
Custody	157 (56%)	517 (34%)	7421 (14%)	8095 (14%)
Community	122 (44%)	994 (66%)	47169 (86%)	48285 (86%)
Total	279 (0.49%)	1511 (2.68%)	54590 (96.83%)	56380 (100%)

Note: CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender.

3.1 Child Pornography Offenders (CPOs)

The CPO sample consisted of 279 offenders. CPOs were convicted of the following index charges: 43 (15%) for accessing child pornography (ACP); five (2%) for film or video charges of child pornography (CPF); 14 (5%) for publishing child pornography (CPP); 221 (79%) for possessing child pornography (CPPO); and 52 (19%) for selling or distributing child pornography (CPS). Importantly, a CPO could be charged with more than one CP offence; thus, the percentages add up to greater than 100% due to offenders having multiple charges. In terms of the number of index CP charges for which offenders were convicted, 218 (78.1%) offenders had one charge; 55 (19.7%) had two charges; four (1.4%) had three charges; and two (0.7%) had four charges.

3.2 CPO, SO, and NSO Samples on Demographic Characteristics, Sexual Offender Variable, and LSI-OR Variables

Descriptive and demographic characteristics were calculated for the CPO, SO, and NSO groups (see Table 2). There was a total of 279 (0.5%) CPOs, 1,511 (2.7%) SOs, and 54,590 (96.8%) NSOs. There was a significant difference for age for the three groups and the Tukey post hoc test revealed that both the CPOs and SOs were significantly older than the NSOs (40 years and 41 years versus 34 years of age; $p < .001$), but the difference between the ages of the CPOs and SOs were not significant. A large majority of offenders in the offender groups were Caucasian (i.e., 87.4% of the CPO sample, 70% of the SO sample, and 69% of the NSO sample), followed by offenders of Aboriginal descent. Specifically, 2.6% of the CPO sample, 8.7% of the SO sample, 7.7% of the NSO sample were Aboriginal. As well, there was a large representation of South Asian offenders in all three samples. Further, in the CPO group, there was a large portion of offenders whose ethnicity was unknown compared to the SO and NSO groups, 4.8% versus 3.5% and 1.2%, respectively. In addition, there were a large representation of Black offenders in both the SO and the NSO groups compared to the CPO sample (6.5% and 9.3% versus 0.7%).

The index offence severity levels significantly differed among the three samples. Tukey post hoc analyses were conducted and it was found that both the CPOs and SOs had significantly higher index offence severity levels compared to the NSOs, and significantly different offence severity levels from each other, with the SOs having the highest offence severity levels. Correspondingly, the sentence length between the offender groups also significantly differed. Both the CPOs and SOs had significantly longer sentence lengths than the NSOs (498 and 551 days versus 432 days; $p < .001$) and the sentence length between CPOs and SOs was also significantly different ($p < .001$). In comparison to the SOs, the CPOs had a lower index offence severity level; thus, they served shorter sentence lengths.

The MCSCS records information (e.g., alerts, treatment history) on OTIS that is collected at admission to custody for custodial offenders and by probation officers for community offenders. For the purposes of this study, one variable of interest analyzed was current and or previous sexual offences (see Table 2). As expected, the CPOs and SOs had a current child pornography or sexual offence and were significantly more likely to have been flagged for this

variable. Interestingly, for 13 (4.7%) of the CPOs and 167 (11.3%) of the SOs, this variable was flagged as not present. As well, 4% of the NSOs were flagged as having a current or previous sexual offence.

Table 2.

Comparisons of CPO, SO, and NSO samples on demographic characteristics

Demographic Characteristics	CPO (n=279) Mean (SD) or n (%)	SO (n=1511) Mean (SD) or n (%)	NSO (n=54590) Mean (SD) or n (%)	ANOVA or Chi Square	
Age:	39.87 ^a (13.57)	40.93 ^a (15.04)	33.98 ^b (12.09)	$F(2, 56376) = 269.82, p < .001$	
Race:					
Aboriginal	7 (2.6%)	120 (8.7%)	3855 (7.7%)	$\chi^2(20) = 163.97, p < .001$	
Black	2 (0.7%)	90 (6.5%)	4615 (9.3%)		
Caucasian	235 (87.4%)	967 (70%)	34393 (69.0%)		
Declined to Specify	1 (0.4%)	5 (0.4%)	188 (0.4%)		
East Asian	2 (0.7%)	23 (1.7%)	1003 (2.0%)		
Hispanic	3 (1.1%)	28 (2.0%)	722 (1.4%)		
Other Minority	--	28 (2.0%)	1328 (2.7%)		
South Asian	4 (1.5 %)	50 (3.6%)	1598 (3.2%)		
Southeast Asian	2 (0.7%)	10 (0.7%)	701 (1.4%)		
Unknown	13 (4.8%)	48 (3.5%)	623 (1.2%)		
West Asian/Arabic	--	13 (0.9%)	839 (1.7%)		
Most Serious Offence (MSO) Severity Level	22 ^a (.36)	23 ^b (.99)	16 ^c (4.26)		$F(2, 56377) = 2409.28, p < .001$
Sentence Length	498.41 ^a (317.56)	550.89 ^b (293.15)	431.64 ^c (212.62)		$F(2, 56377) = 236.53, p < .001$
MCSCS Variable: Current/previous Sexual Offence(s)	264 (95.3%)	1316 (88.7%)	1981 (4.0%)		$\chi^2(2) = 19499.37, p < .001$

Note: CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender. ^{a,b,c} = Different lettered superscripts indicated that the Tukey post hoc test differences of the means were significant at $p < .001$; whereas, same lettered superscripts indicated that the differences of the means were not significant.

The means and standard deviations of the LSI-OR variables, including the general risk/need total and strength score, their corresponding risk levels (both before and after the use of the override function), and the eight subscales of the general risk/need section and their corresponding strength scores, were calculated for the CPO, SO, and NSO samples (Table 3 and Figure 1). The general risk/need score significantly differed among the three samples and post hoc analyses indicated that the CPOs had significantly lower scores compared to both the SOs ($p < .001$) and NSOs ($p < .001$) and the SOs had significantly lower scores compared to the NSOs ($p < .001$). For the strength score of the general risk/needs section, the offender groups significantly differed with the CPOs and SOs having lower scores compared to the NSOs. However, post hoc analyses indicated that the differences in means significantly differed only between the SOs and NSOs ($p = .05$).

The initial risk levels, risk override, and final risk levels were significantly different for the three samples. Post hoc analyses indicated that the initial risk levels for the three groups were significantly different from each other, with the CPOs having the lowest risk level followed by the SOs and then the NSOs ($p = .002$). The Tukey post hoc test also informed that the risk override levels for the three groups were significantly different from each other ($p < .001$). The CPOs scored highest on the measure of risk override, indicating that the use of the override feature to increase their risk level occurred more often compared to the SOs and NSOs. For the final risk level, SOs and CPOs had higher final risk levels compared to the NSOs and post hoc analyses portrayed that the differences were significant between the NSOs and both the CPOs and SOs ($p < .001$), but did not differ between the CPOs and SOs.

Overall, the CPOs scores on the general risk/needs subscales were lower than both the SOs and NSOs scores, with the exception of the leisure/recreation, procriminal attitude/orientation, and antisocial patterns subscales. The criminal history subscale and the strength score significantly differed among the samples. Post hoc analyses indicated that the three samples differed significantly from each other on the criminal history subscale ($p < .001$). However, only the means between the SOs and NSOs significantly differed from each other on the strength score ($p = .002$). Further, the education/employment subscale and the strength score significantly differed among the three groups. Through the use of post hoc analyses, it was apparent that only the means for the SOs and NSOs significantly differed from each other on the

education/employment subscale ($p < .001$). However, for the strength score of education/employment subscale, the CPOs significantly differed from both the SOs ($p = .024$) and the NSOs ($p = .004$), but no significant difference was found between the SOs and NSOs. As well, the family/marital subscale and the strength score significantly differed among the three groups. Post hoc analyses revealed that the only significant difference in the means was found between the SOs and NSOs ($p < .001$) and the only significant difference for the strength score was found between the SOs and NSOs ($p = .016$). The CPOs scores were the highest for the leisure/recreation subscale compared to both the SOs and NSOs scores and these scores were significantly different among the three groups. It was found that there was a significant difference in the means between the CPOs and both the SOs ($p = .002$) and the NSOs ($p = .014$).

Additionally, the companions subscale significantly differed among the three groups and post hoc analyses revealed that there was a significant difference in the means between all of the offender groups ($p < .001$). The ANOVA analyses indicated significant differences between the substance abuse subscale and the strength score and the strength score for antisocial patterns. Post hoc results demonstrated that there was a significant difference between the means of all offender groups on the substance abuse subscale ($p < .001$) and its strength score ($p = .025$). For the procriminal attitude/orientation scale and the strength score, again there was a significant difference between the offender samples where the SOs scored the highest and the NSOs scored the lowest. It was found the mean for the SOs significantly differed from the means of both the CPOs ($p = .030$) and the NSOs ($p < .001$) on the procriminal attitude/orientation subscale. The only significant findings for the strength score of the procriminal attitude/orientation scale was between the mean of the NSOs and both the CPOs ($p = .045$) and the SOs ($p < .001$). Similarly, the SOs scored the highest on the antisocial pattern subscale whereas the NSOs scored the lowest but this difference was not significant. The only significant difference of means was for the strength score of the antisocial pattern subscale which was between the SOs and NSOs ($p = .001$).

Table 3.

Comparisons of CPO, SO, and NSO samples on LSI-OR variables

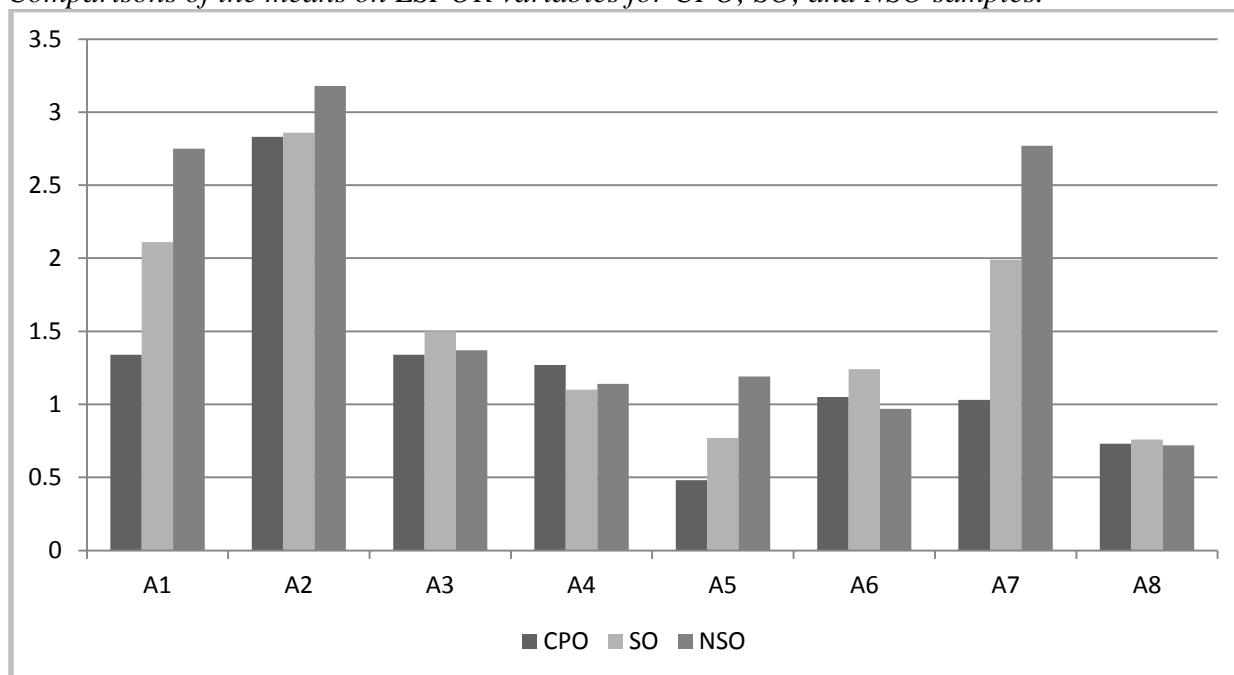
LSI-OR Variables	CPO (<i>n</i> =279) Mean (SD)	SO (<i>n</i> =1511) Mean (SD)	NSO (<i>n</i> =54590) Mean (SD)	ANOVA
General Risk/Needs	10.07 ^a (6.20)	12.29 ^b (8.43)	14.08 ^c (8.81)	$F(2, 56377) = 58.46, p < .001$
Strength	.71 ^a (1.47)	.75 ^a (1.35)	.84 ^b (1.47)	$F(2, 56377) = 3.67, p = .026$
Initial Risk Level	2.32 ^a (0.88)	2.57 ^b (1.10)	2.78 ^c (1.11)	$F(2, 56377) = 51.18, p < .001$
Risk Override	1.97 ^a (2.00)	1.57 ^b (1.91)	.46 ^c (1.15)	$F(2, 56377) = 863.60, p < .001$
Final Risk Level (after override)	3.19 ^a (1.07)	3.23 ^a (1.09)	2.94 ^b (1.06)	$F(2, 56377) = 62.87, p < .001$
A1: Criminal History	1.34 ^a (1.49)	2.11 ^b (2.23)	2.75 ^c (2.50)	$F(2, 56377) = 91.26, p < .001$
A1: Strength	.13 ^a (.33)	.10 ^b (.30)	.13 ^a (.34)	$F(2, 56377) = 5.96, p = .003$
A2: Education/ Employment	2.83 ^a (2.42)	2.86 ^a (2.62)	3.18 ^b (2.75)	$F(2, 56377) = 12.53, p < .001$
A2: Strength	.13 ^a (.33)	.19 ^b (.40)	.20 ^b (.40)	$F(2, 56377) = 5.23, p = .005$
A3: Family/Marital	1.34 ^a (1.09)	1.5 ^a (1.11)	1.37 ^b (1.11)	$F(2, 56377) = 8.32, p < .001$
A3: Strength	.12 ^a (.33)	.13 ^a (.34)	.16 ^b (.36)	$F(2, 56377) = 5.04, p = .006$
A4: Leisure/ Recreation	1.27 ^a (.75)	1.10 ^b (.78)	1.14 ^b (.75)	$F(2, 56377) = 6.46, p = .002$
A4: Strength	.03 (.17)	.05 (.23)	.06 (.24)	$F(2, 56377) = 2.81, p = .060$
A5: Companions	.48 ^a (.75)	.77 ^b (.95)	1.19 ^c (1.06)	$F(2, 56377) = 177.85, p < .001$
A5: Strength	.07 (.25)	.08 (.26)	.07 (.26)	$F(2, 56377) = 0.17, p = .841$
A6: Procriminal Attitude/Orientation	1.05 ^a (1.05)	1.24 ^b (1.16)	.97 ^a (1.14)	$F(2, 56377) = 42.98, p < .001$
A6: Strength	.05 ^a (.22)	.06 ^a (.24)	.09 ^b (.29)	$F(2, 56377) = 12.07, p < .001$
A7: Substance Abuse	1.03 ^a (1.59)	1.99 ^b (2.36)	2.77 ^c (2.40)	$F(2, 56377) = 150.15, p < .001$
A7: Strength	.16 ^a (.37)	.12 ^b (.32)	.09 ^c (.28)	$F(2, 56377) = 17.10, p < .001$
A8: Antisocial Pattern	.73 (.77)	.76 (.86)	.72 (.91)	$F(2, 56377) = 1.36, p = .257$

A8: Strength	.03 ^a (.17)	.02 ^b (.14)	.04 ^a (.19)	$F(2, 56377) = 7.04, p = .001$
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Note: LSI-OR = Level of Service Inventory – Ontario Revision. CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender. ^{a,b,c} = Different lettered superscripts indicated that the Tukey post hoc test differences of the means were significant at $p < .05$; whereas, same lettered superscripts indicated that the differences of the means were not significant.

Figure 1.

Comparisons of the means on LSI-OR variables for CPO, SO, and NSO samples.



Note: LSI-OR = Level of Service Inventory – Ontario Revision. CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender. A1 = criminal history. A2 = education/employment. A3 = family/marital. A4 = leisure/recreation. A5 = companions. A6 = procriminal attitude/orientation. A7 = substance abuse. A8 = antisocial patterns.

The descriptive information for the remaining LSI-OR variables, including the specific risk/need factors, institutional factors, other client issues, and special responsivity considerations, were also calculated for the CPO, SO, and NSO samples (Table 4). All of the variables significantly differed for the three offender groups; therefore, post hoc analyses were conducted. Overall, the CPOs scored higher than both the SOs and NSOs on the remaining LSI-OR variables, with the exception of the personal problems with criminogenic potential, history of perpetration, and special responsivity considerations subscales. It was found that there was a

significant difference between the means for all offenders on: the personal problems with criminogenic potential subscale ($p = .001$); the history of perpetration subscale ($p < .001$); the institutional factors subscale ($p < .001$); the barrier to release subscale ($p < .001$); and the special responsivity considerations subscale ($p = .003$). The only significant differences of the means for the social, health, and mental health scale was between the NSOs and both the CPOs ($p < .001$) and SOs ($p < .001$).

Table 4.

Comparisons of CPO, SO, and NSO samples on LSI-OR variables

LSI-OR Variables	CPO (<i>n</i> =279) Mean (SD)	SO (<i>n</i> =1511) Mean (SD)	NSO (<i>n</i> =54590) Mean (SD)	ANOVA
Specific Risk/Needs:				
B1: Personal Problems with Criminogenic Potential	2.20 ^a (1.65)	2.60 ^b (1.90)	1.84 ^c (1.61)	$F(2, 56377) = 169.12, p < .001$
B2: History of Perpetration	.30 ^a (.68)	1.15 ^b (1.15)	1.04 ^c (1.17)	$F(2, 56377) = 63.26, p < .001$
C: Prison Experience: Institutional Factors	.97 ^a (.94)	.72 ^b (.99)	.32 ^c (.74)	$F(2, 56377) = 320.83, p < .001$
Other Client Issues:				
F1: Social, Health, and Mental Health	2.68 ^a (2.24)	2.40 ^a (2.27)	1.80 ^b (2.06)	$F(2, 56377) = 87.16, p < .001$
F2: Barrier to Release	.09 ^a (.29)	.05 ^b (.22)	.01 ^c (.11)	$F(2, 56377) = 153.04, p < .001$
G: Special Responsivity Considerations	1.14 ^a (.98)	1.37 ^b (1.09)	.95 ^c (.96)	$F(2, 56377) = 144.94, p < .001$

Note: LSI-OR = Level of Service Inventory – Ontario Revision. CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender. ^{a,b,c} = Different lettered superscripts indicated that the Tukey post hoc test differences of the means were significant at $p < .01$; whereas, same lettered superscripts indicated that the differences of the means were not significant.

3.3 Recidivism Variables for the CPO, SO, and NSO Samples

3.3.1 CP Recidivism.

Of the total sample, 18 (0.03%) offenders received a new CP index offence (see Table 5). Of these, 12 were charged with one new CP charge, five were charged with two, and one was charged with three new CP charges. Focusing specifically on the CPO group, seven (2.5%) of

these offenders recidivated with new CP charges: four received one new charge and three received two charges. In turn, a total of three (0.2%) SOs recidivated with CP charges: two received one new CP charge and one received two charges. Furthermore, a total of eight (0.01%) NSOs recidivated with CP charges: six received one new CP charge, one received two charges, and one received three charges. Overall, the CPO sample had the highest rates of CP recidivism (2.5%) compared to the SO (0.2%) and NSO (0.01%) samples, $\chi^2(2) = 554.61, p < .001$.

Table 5.
Comparisons of CPO, SO, and NSO samples on CP recidivism

CP Recidivism	CPO	SO	NSO	Total
No Recontact:				
Count	272	1508	54582	56362
% of Total	97.49%	99.80%	99.99%	99.97%
Recontact:				
Count	7	3	8	18
% of Total	2.51%	0.20%	0.01%	0.03%
Total:				
Count	279	1511	54590	56380
% of Total	0.49%	2.68%	96.83%	100%

Note: CP = child pornography. CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender.

When examining specific CP recontact offences, the offender groups significantly differed on all CP recontact offences and the recontact total variable; therefore, post hoc analyses were conducted for all of the variables (see Table 6). The results indicated that the differences in the mean on the ACP recontact variable for the CPO sample significantly differed among both the means for the SO ($p < .001$) and NSO ($p < .001$) samples, with the CPOs incurring more ACP recontact charges compared to the other two offender groups. Similarly, for the CPF and CPP recontact variables, the significant differences in the means were found between the CPO sample and both the SO ($p < .001$) and NSO ($p < .001$) samples. Again, the CPOs incurred more CPF and CPP recontact charges compared to the other two offender groups. When examining the CPS recontact variable, the differences in the means were significant for the SO sample and both the CPO ($p = .042$) and NSO ($p < .001$) samples, wherein the SOs incurred more CPS recontact charges. The differences in the means for both the CPPO recontact variable ($p = .008$) and the recontact total variable ($p = .001$) was significantly different among all offender groups.

Table 6.

The number of CPO, SO, and NSO samples by type and number of CP recidivism offences

Type of CP Recontact Offences	Number of Offenders Charged with Recontact Offences			ANOVA Between CP Recontact Offences by Offender Group
	CPO (n)	SO (n)	NSO (n)	
Accessing CP:	2 ^a	-- ^b	2 ^b	$F(2, 56377) = 91.91, p < .001$
CP: Film/video charges:	1 ^a	-- ^b	-- ^b	$F(2, 56377) = 100.90, p < .001$
Producing CP:	1 ^a	-- ^b	1 ^b	$F(2, 56377) = 49.87, p < .001$
Possessing CP:	6 ^a	2 ^b	6 ^c	$F(2, 56377) = 261.94, p < .001$
CP: Sell/distribute charges:	-- ^a	2 ^b	2 ^a	$F(2, 56377) = 17.18, p < .001$
Recontact Total CP Offences	7 ^a	3 ^b	8 ^c	$F(2, 56377) = 249.87, p < .001$

Note: CP = child pornography. CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender. ^{a,b,c} = Different lettered superscripts indicated that the Tukey post hoc test differences of the means were significant at $p < .05$; whereas, same lettered superscripts indicated that the differences of the means were not significant.

3.3.2 Other Recidivism Variables.

The sexual, violent, and general recidivism variables were analyzed by the type of offender group. Among all offenders captured in the final sample, the sexual recidivism rate was 0.3%, while the violent recidivism rate was 8.1%, and the general recidivism rate was 27% (see Tables 7 to 9). The CPOs had the highest sexual recidivism rate compared to the SO and NSO groups, 2.9% compared to 2.5% and 0.3%, respectively. Whereas, the NSOs had the highest violent recidivism rate compared to the CPO and SO groups, 8.2% compared to 1.1% and 4.4%. As well, the NSO sample had a higher rate of general recidivism (27.5%) compared to the CPO (9%) and SO (13.6%) samples. Even though the CPOs had higher CP and sexual recidivism rates compared to both the SOs and the NSOs, it is important to note that these recidivism rates were very low.

Table 7.

Comparisons of CPO, SO, and NSO samples on sexual recidivism

Sexual Recidivism	CPO	SO	NSO	Total
No Recontact:				
Count	271	1473	54456	56200
% of Total	97.13%	97.49%	99.75%	99.68%
Recontact:				
Count	8	38	134	180
% of Total	2.87%	2.51%	0.25%	0.32%
Total:				
Count	279	1511	54590	56380
% of Total	0.49%	2.68%	96.83%	100%

Note: CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender.

Table 8.

Comparisons of CPO, SO, and NSO samples on violent recidivism

Violent Recidivism	CPO	SO	NSO	Total
No Recontact:				
Count	276	1444	50114	51834
% of Total	98.92%	95.57%	91.80%	91.94%
Recontact:				
Count	3	67	4476	4546
% of Total	1.08%	4.43%	8.20%	8.06%
Total:				
Count	279	1511	54590	56380
% of Total	0.49%	2.68%	96.83%	100%

Note: CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender.

Table 9.

Comparisons of CPO, SO, and NSO samples on general recidivism

General Recidivism	CPO	SO	NSO	Total
No Recontact:				
Count	254	1305	39577	41136
% of Total	91.04%	86.37%	72.50%	72.96%
Recontact:				
Count	25	206	15013	15244
% of Total	8.96%	13.63%	27.50%	27.04%
Total:				
Count	279	1511	54590	56380
% of Total	0.49%	2.68%	96.83%	100%

Note: CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender.

The average lapse time did not significantly differ for the three offender groups; however, the NSOs recidivated slightly quicker. Interestingly, the average index reoffense severity levels

were similar for all three samples. However, the NSOs received slightly shorter sentence lengths, while the CPOs received the longest sentence lengths. The majority of offenders in all three groups received custodial sentences for their recontact offence (Table 10).

Table 10.

Comparisons of CPO, SO, and NSO samples on recidivism variables

Recidivism Variables	CPO (n=279) Mean (SD) or n (%)	SO (n=1511) Mean (SD) or n (%)	NSO (n=54590) Mean (SD) or n (%)	ANOVA or Chi Squares
Sexual Recidivism	8 (2.9%)	38 (2.5%)	134 (0.3%)	$\chi^2(2) = 295.15, p < .001$
Violent Recidivism	3 (1.1%)	67 (4.4%)	4476 (8.2%)	$\chi^2(2) = 56.59, p < .001$
General Recidivism	25 (9.0%)	206 (13.6%)	15013 (27.5%)	$\chi^2(2) = 189.79, p < .001$
Lapse Time	344.12 (223.67)	354.24 (205.06)	331.10 (196.64)	$F(2, 15395) = 1.48, p = .228$
New Most Serious Offence (MSO) Severity Level	15 (6)	15 (5)	15 (5)	$F(2, 15395) = .05, p = .951$
Sentence Length	285.81 (318.14)	217.32 (354.96)	210.90 (264.28)	$F(2, 15395) = 1.09, p = .337$
New Sentence Type:				
Custody	19 (73.1%)	139 (66.5%)	8529 (56.2%)	$\chi^2(4) = 12.40, p = .015$
Probation	5 (19.2%)	60 (28.7%)	5631(37.1%)	
Conditional Sentence	2 (7.7%)	10 (4.8%)	1003 (6.6%)	

Note: CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender.

3.3.3 Summary.

A summary of the number of recidivists for each of the four primary recidivism variables is provided in Table 11. As illustrated, the CPOs had higher recidivism rates for both CP and sexual recidivism compared to the SO and NSO samples; whereas, the NSOs had higher recidivism rates for both violent and general recidivism compared to the CPO and SO samples. The base rates for both CP and sexual recidivism were both low. It is important to note that the sexual recidivism variable also includes all of the CP recidivists, while the violent recidivism variable only includes the violent sexual offences; thus, it does not include the CP recidivists but

does include some of the sexual recidivists. However, the general recidivism variable captures all of the recidivists, including the CP, sexual, and violent recidivists (see the recidivism section in the methods for more information); but, it also captures other types of recidivism, such as DWI recidivism.

Table 11.

Summary of the number of recidivists for each of the recidivism variables

Recidivism Type	CPO (n=279) n (%)	SO (n=1511) n (%)	NSO (n=54590) n (%)	Total Sample (n=56380) n (%)
CP Recidivism	7 (2.51%)	3 (0.20%)	8 (0.01%)	18 (0.03%)
Sexual Recidivism	8 (2.87%)	38 (2.51%)	134 (0.25%)	180 (0.32%)
Violent Recidivism	3 (1.08%)	67 (4.43%)	4476 (8.20%)	4546 (8.06%)
General Recidivism	25 (8.96%)	206 (13.63%)	15013 (27.5%)	15244 (27.04%)

Note: CP = child pornography. CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender.

3.4 Use of the Override

An analysis of the initial risk level and the resulting final risk level, after accounting for the use of the override, was conducted for the CPO, SO, and NSO groups, using chi square tests. It was found that the override feature was used with a total of 8,448 offenders: 142 (50.9%) CPOs, 628 (41.6%) SOs, and 7,678 (14.1%) NSOs. The use of the override feature to increase or decrease an offender's risk level was significantly different between the three offender groups, $F(2, 56377) = 863.60, p < .001$. Post hoc analysis using Tukey was conducted and found that the use of the override feature was significantly different between all offender groups ($p < .001$). These results for the difference between the initial and final risk level were significant for the CPOs ($\chi^2(16) = 239.37, p < .001$). A common pattern of significant results were found between the initial and final risk level for the SOs ($\chi^2(16) = 2079.58, p < .001$) and the NSOs ($\chi^2(16) = 161182.70, p < .001$) samples. Overall, the override feature was used significantly more often for the CPOs (50.2% of the CPOs risk level was increased; 0.4% of the CPOs risk level was decreased) and SOs (40.8% of the SOs risk level was increased; 0.5% of the SOs risk level was decreased) compared to the NSOs (13.2% of the NSOs risk level was increased; 0.8% of the

NSOs risk level was decreased). The contingency tables which display the frequency distribution of these variables for these analyses are displayed in Tables 12 to 14.

Table 12.

Initial risk level by final risk level for CPOs

Initial Risk Level	Final Risk After Override					Total
	Very Low	Low	Medium	High	Very High	
Very Low						
Count	19	0	12	12	2	45
% of Total	42.2%	0.0%	26.7%	26.7%	4.4%	16.1%
Low						
Count	0	56	26	42	4	128
% of Total	0.0%	43.8%	20.3%	32.8%	3.1%	45.9%
Medium						
Count	0	0	42	26	14	82
% of Total	0.0%	0.0%	51.2%	31.7%	17.1%	29.4%
High						
Count	0	0	0	18	2	20
% of Total	0.0%	0.0%	0.0%	90%	10%	7.2%
Very High						
Count	0	0	1	0	3	4
% of Total	0.0%	0.0%	25%	0.0%	75%	1.4%
Total						
Count	19	56	81	98	25	279
% of Total	6.8%	20.1%	29.0%	35.1%	9.0%	100%

Note. CPO = child pornography offender. Cell percentages are the percentage of the initial risk levels (rows), while total percentages are the percentage of all of the offenders.

Table 13.

Initial risk level by final risk level for SOs

Initial Risk Level	Final Risk After Override					Total
	Very Low	Low	Medium	High	Very High	
Very Low						
Count	133	17	58	68	3	279
% of Total	47.6%	6.1%	20.8%	24.4%	1.1%	18.5%
Low						
Count	0	214	109	134	15	472
% of Total	0.0%	45.3%	23.1%	28.4%	3.2%	31.2%
Medium						
Count	0	1	259	165	24	449
% of Total	0.0%	0.2%	57.7%	36.7%	5.4%	29.7%

High						
Count	0	0	5	216	24	245
% of Total	0.0%	0.0%	2.0%	88.2%	9.8%	16.2%
Very High						
Count	0	0	1	0	65	66
% of Total	0.0%	0.0%	1.5%	0.0%	98.5%	4.4%
Total						
Count	133	232	432	583	131	1511
% of Total	8.8%	15.4%	28.6%	38.6%	8.7%	100%

Note. SO = sexual offender. Cell percentages are the percentage of the initial risk levels (rows), while total percentages are the percentage of all of the offenders.

Table 14.
Initial risk level by final risk level for NSOs

Initial Risk Level	Final Risk After Override					Total
	Very Low	Low	Medium	High	Very High	
Very Low						
Count	5815	335	1400	71	5	7626
% of Total	76.25%	4.39%	18.36%	0.93%	0.07%	14.0%
Low						
Count	7	10573	3467	268	11	14326
% of Total	0.05%	73.8%	24.2%	1.87%	0.08%	26.2%
Medium						
Count	6	85	16980	1312	68	18451
% of Total	0.03%	0.46%	92.03%	7.11%	0.37%	33.8%
High						
Count	0	5	251	10232	243	10731
% of Total	0.0%	0.05%	2.34%	95.35%	2.26%	19.7%
Very High						
Count	0	0	33	28	3395	3456
% of Total	0.0%	0.0%	0.95%	0.81%	98.24%	6.3%
Total						
Count	5828	10998	22131	11911	3722	54590
% of Total	10.7%	20.1%	40.5%	21.8%	6.8%	100%

Note. NSO = non-sexual offender. Cell percentages are the percentage of the initial risk levels (rows), while total percentages are the percentage of all of the offenders.

3.5 Survival Analysis (Time at Risk) for the Recidivism Variables

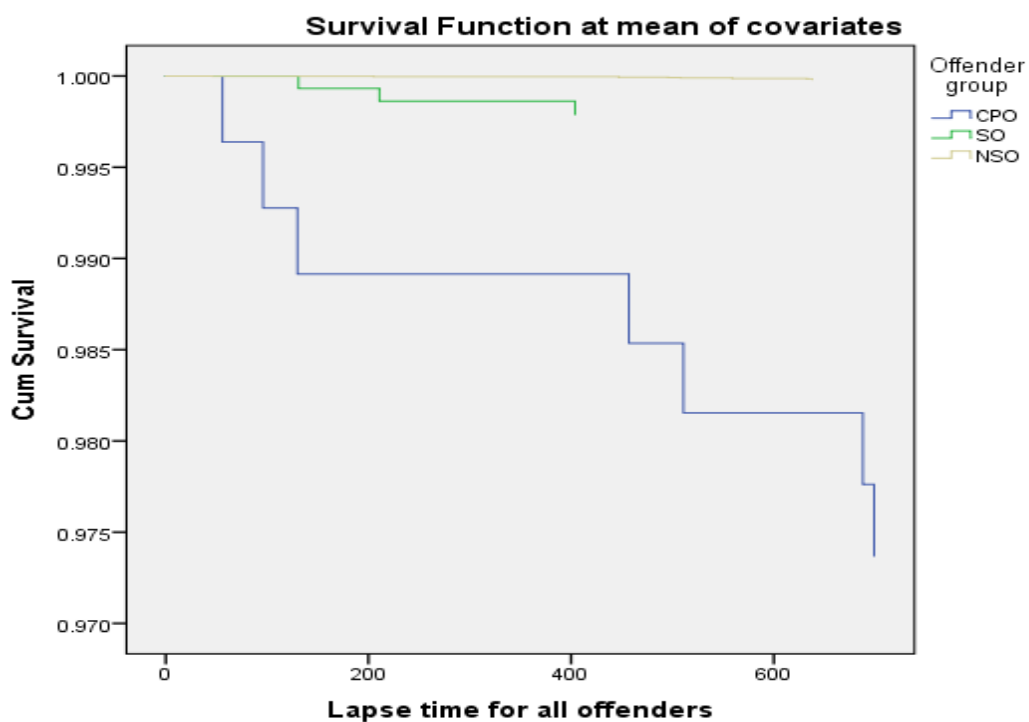
A survival time/time at risk variable was created by using four separate equations for the offenders and combining the results into one variable. Specifically, the equations were as follows: an offender's recidivism date subtracted from the offender's release date for the custody

recidivists; the follow-up date subtracted from an offender’s release date for the custody non-recidivists; an offender’s recidivism date subtracted from their LSI-OR assessment date for the community recidivists; and the follow-up date subtracted from the LSI-OR assessment date for the community non-recidivists. The mean survival time for all offenders based on these equations was 861 days ($M = 861.18$; $SD = 417.11$).

An offender’s time spent on release was calculated for the four primary recidivism variables using Cox regression/survival analysis. Figure 2 illustrates the survival curves for the three offender groups for CP recidivism. The SOs and NSOs had an estimated probability of survival that was greater than for the CPOs. When examining sexual recidivism, Figure 3 portrays that the NSOs had an estimated probability of survival that was greater than the CPO and SO groups. Conversely, when investigating violent and general recidivism, the CPO and SO groups had an estimated probability of survival that was greater than for the NSO group, with the CPOs experiencing the longest survival in the community (Figure 4 and Figure 5).

Figure 2.

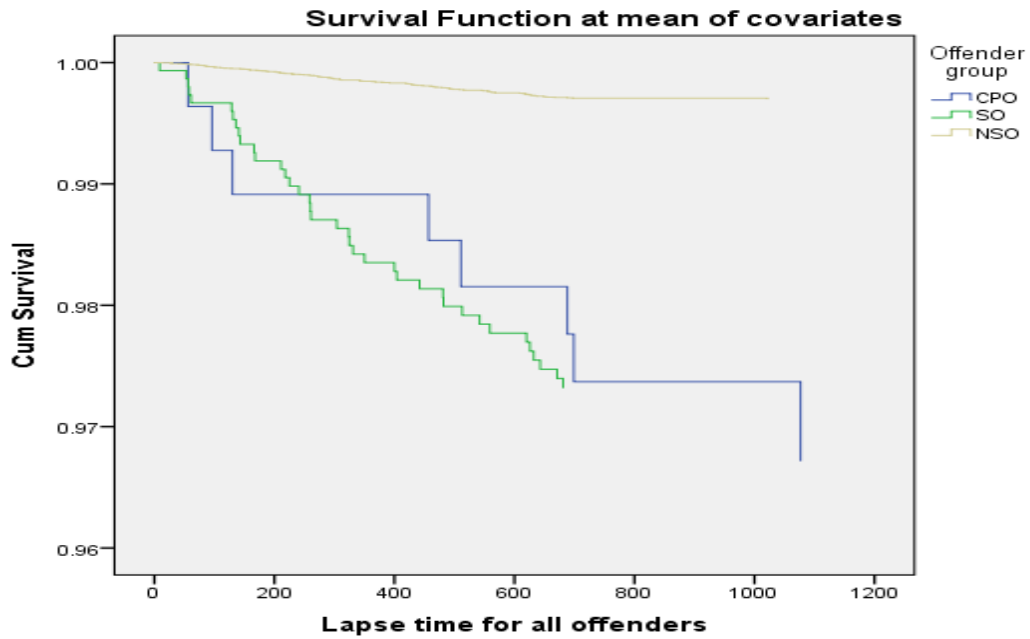
Survival curves for the CPO, SO, and NSO samples for CP recidivism.



Note: CP = Child pornography. CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender.

Figure 3.

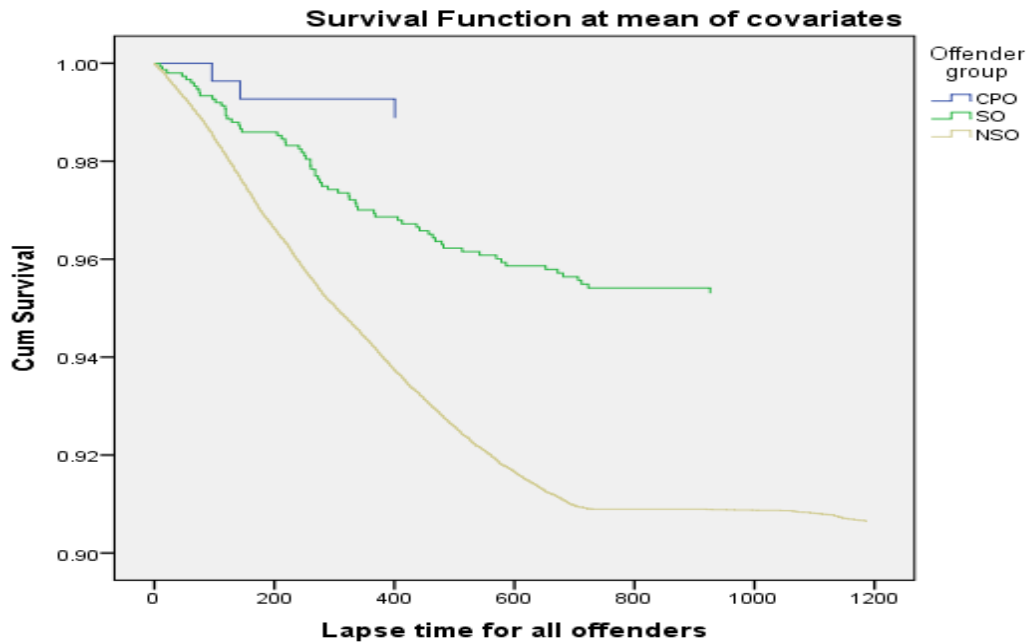
Survival curves for the CPO, SO, and NSO samples for sexual recidivism.



Note: CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender.

Figure 4.

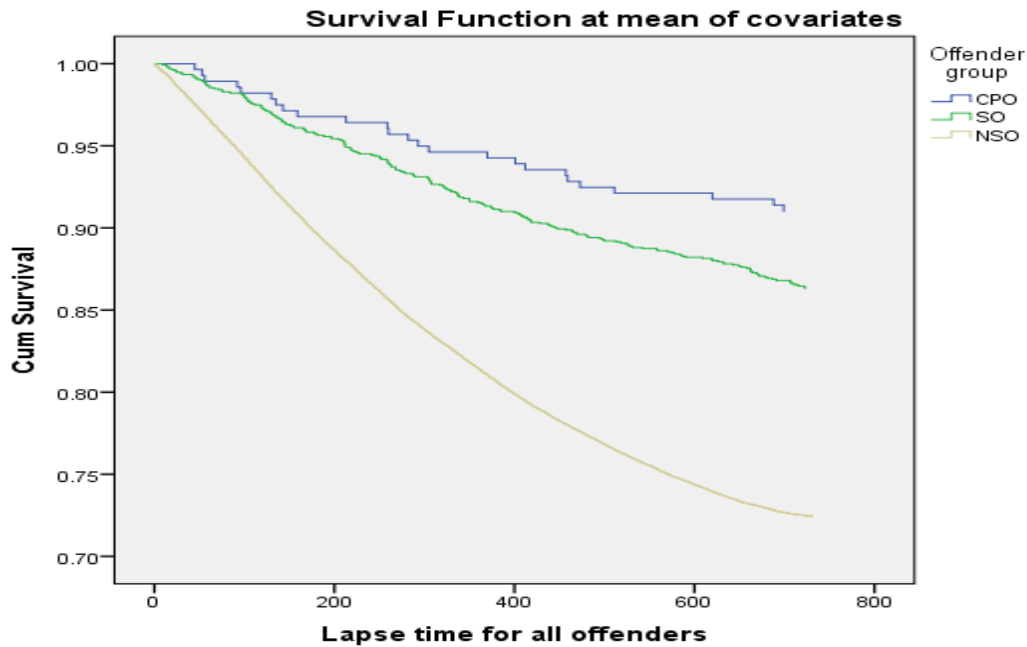
Survival curves for the CPO, SO, and NSO samples for violent recidivism.



Note: CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender.

Figure 5.

Survival curves for the CPO, SO, and NSO samples for general recidivism.



Note: CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender.

3.6 Correlations between LSI-OR and Recidivism Variables

The correlations between various aspects of the LSI-OR and CP, sexual, violent, and general recidivism were examined for the CPO, SO, and NSO samples to assess the applicability of the LSI-OR to the different offender populations. It is important to note that although correlations were conducted for all four recidivism variables, the results must be taken with caution for CP and sexual recidivism due to the low base rates (i.e., below 10%) which can result in a lack of statistical power to detect an association. As well, the sample sizes among the CPO, SO, and NSO samples were very different, resulting in some very small correlations emerging as significant for the NSOs, which may be due to their large sample size. When examining the correlations for CP recidivism among the offender groups, none of the correlations were significant, with the exception of a few LSI-OR variables for the NSOs (Table 15). The correlations for sexual recidivism and the LSI-OR variables among the CPOs and SOs were not significant, with the exception of the final risk level for the SOs. However, nearly all of the correlations for sexual recidivism among the NSOs were significant (Table 16). It is important to note the negative correlations between the LSI-OR and CP recidivism for the CPOs and SOs

and between the LSI-OR and sexual recidivism for the CPOs. Otherwise, as the rates of both CP and sexual recidivism increased for the CPOs and SOs, their LSI-OR scores decreased or vice versa; however, these correlations were not significant. A possible explanation may be that the CPO and SO samples were assessed as low risk offenders; thus, even the CPO and SO recidivists were lower risk offenders. This was illustrated in the CPO sample where it was found that the very low risk offenders had higher recidivism rates compared to the low risk CPOs.

Table 15.

Correlations between LSI-OR variables with CP recidivism for CPO, SO, and NSO samples

LSI-OR Variables	CP Recidivism		
	CPO (n=279)	SO (n=1511)	NSO (n = 54590)
General Risk/Needs	-.050	-.028	.002
Strength	.000	-.014	-.001
Initial Risk Level	-.032	-.037	.004
Final Risk Level	-.072	-.009	.004
A1: Criminal History	-.068	-.029	-.001
A2: Education/ Employment	-.036	-.003	-.001
A3: Family/Marital	-.008	-.033	.001
A4: Leisure/ Recreation	-.026	.014	.004
A5: Companions	-.043	-.005	.002
A6: Procriminal Attitude/Orientation	.014	-.022	.011**
A7: Substance Abuse	-.017	-.038	-.001
A8: Antisocial Pattern	-.063	-.022	.010*
B1: Personal Problems with Criminogenic Potential	-.006	-.006	.016***
B2: History of Perpetration	-.037	-.045	-.004
C1: Institutional Factors	.029	-.033	.007
F1: Social, Health, and Mental Health	-.029	-.028	.014***
F2: Barrier to Release	.030	-.010	-.001
G1: Special Responsivity Considerations	.001	-.029	.007

Note: CP = child pornography. LSI-OR = Level of Service Inventory – Ontario Revision. CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender.

***Correlation is significant at the .001 level (2-tailed)

**Correlation is significant at the .01 level (2-tailed)

* Correlation is significant at the .05 level (2-tailed)

Table 16.

Correlations between LSI-OR variables with sexual recidivism for CPO, SO, and NSO samples

LSI-OR Variables	Sexual Recidivism		
	CPO (n=279)	SO (n=1511)	NSO (n = 54590)
General Risk/Needs	-.030	.026	.024***
Strength	-.010	-.030	-.011**
Initial Risk Level	-.014	.029	.024***
Final Risk Level	-.071	.055*	.031***
A1: Criminal History	-.054	.015	.019***
A2: Education/ Employment	-.015	.014	.023***
A3: Family/Marital	.006	.024	.018***
A4: Leisure/ Recreation	-.003	.013	.014***
A5: Companions	-.054	.004	.011**
A6: Procriminal Attitude/Orientation	.053	.044	.019***
A7: Substance Abuse	-.030	.014	.009*
A8: Antisocial Pattern	-.051	.031	.021***
B1: Personal Problems with Criminogenic Potential	.031	.032	.036***
B2: History of Perpetration	-.045	-.036	.018***
C1: Institutional Factors	.074	.011	.022***
F1: Social, Health, and Mental Health	-.005	.009	.025***
F2: Barrier to Release	.021	-.018	.002
G1: Special Responsivity Considerations	.041	-.001	.026***

Note: LSI-OR = Level of Service Inventory – Ontario Revision. CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender.

***Correlation is significant at the .001 level (2-tailed)

**Correlation is significant at the .01 level (2-tailed)

* Correlation is significant at the .05 level (2-tailed)

Nearly all of the correlations for violent recidivism among the SO and NSO groups were significant. Alternatively, none of the correlations for violent recidivism were significant among the CPOs, with the exception of the companions subscale (Table 17). In addition, all of the correlations for general recidivism among the SO and NSO samples were significant and most of the correlations for general recidivism among the CPOs were significant (Table 18). The general risk/needs score was correlated with general recidivism among the offender groups; however, it was not correlated as strongly for the CPOs and SOs as it was for the NSOs.

Table 17.

Correlations between LSI-OR variables with violent recidivism for CPO, SO, and NSO samples

LSI-OR Variables	Violent Recidivism		
	CPO (n=279)	SO (n=1511)	NSO (n = 54590)
General Risk/Needs	.044	.167***	.178***
Strength	-.003	-.025	-.044***
Initial Risk Level	.002	.158***	.169***
Final Risk Level	.079	.102***	.165***
A1: Criminal History	.023	.154***	.151***
A2: Education/ Employment	.007	.104***	.132***
A3: Family/Marital	.064	.084***	.109***
A4: Leisure/ Recreation	.009	.093***	.094***
A5: Companions	.119*	.137***	.113***
A6: Procriminal Attitude/Orientation	-.005	.125***	.102***
A7: Substance Abuse	.064	.103***	.115***
A8: Antisocial Pattern	-.054	.128***	.142***
B1: Personal Problems with Criminogenic Potential	.114	.137***	.168***
B2: History of Perpetration	.056	.156***	.139***
C1: Institutional Factors	.003	.122***	.103***
F1: Social, Health, and Mental Health	.015	.050	.110***
F2: Barrier to Release	-.033	.039	.024***
G1: Special Responsivity Considerations	.092	.082***	.104***

Note: LSI-OR = Level of Service Inventory – Ontario Revision. CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender.

***Correlation is significant at the .001 level (2-tailed)

**Correlation is significant at the .01 level (2-tailed)

* Correlation is significant at the .05 level (2-tailed)

Table 18.

Correlations between LSI-OR variables with general recidivism for CPO, SO, and NSO samples

LSI-OR Variables	General Recidivism		
	CPO (n=279)	SO (n=1511)	NSO (n = 54590)
General Risk/Needs	.163**	.315***	.389***
Strength	-.007	-.064*	-.100***
Initial Risk Level	.129*	.292***	.368***
Final Risk Level	.072	.201***	.346***
A1: Criminal History	.188**	.267***	.332***
A2: Education/ Employment	.043	.218***	.286***
A3: Family/Marital	.134*	.139***	.190***
A4: Leisure/ Recreation	.106	.166***	.214***

A5: Companions	.183**	.249***	.274***
A6: Procriminal Attitude/Orientation	.092	.192***	.227***
A7: Substance Abuse	.066	.236***	.255***
A8: Antisocial Pattern	.077	.220***	.309***
B1: Personal Problems with Criminogenic Potential	.267***	.229***	.286***
B2: History of Perpetration	.175**	.182***	.218***
C1: Institutional Factors	.116	.183***	.224***
F1: Social, Health, and Mental Health	.156**	.072**	.199***
F2: Barrier to Release	-.011	.067**	.061***
G1: Special Responsivity Considerations	.160**	.115***	.181***

Note: LSI-OR = Level of Service Inventory – Ontario Revision. CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender.

***Correlation is significant at the .001 level (2-tailed)

**Correlation is significant at the .01 level (2-tailed)

* Correlation is significant at the .05 level (2-tailed)

3.6.1 Summary.

Overall, the LSI-OR variables were not related to either CP or sexual recidivism for the CPO and the SO groups. Further, only a few of the LSI-OR variables were related to CP recidivism for the NSOs; however, there were associations between most of the LSI-OR variables and sexual recidivism for the NSOs. In addition, there was no relationship between the LSI-OR and violent recidivism for the CPOs, while associations were found for both the SO and NSO samples. Further, the results illustrated that the LSI-OR variables were related to general recidivism for all three offender groups. In sum, the LSI-OR variables were related only to general recidivism for the CPO group, while the LSI-OR variables were related to violent and general recidivism for the SO group. However, the LSI-OR variables were correlated with sexual, violent, and general recidivism for the NSO group.

3.7 ROC Coefficients for LSI-OR Variables with the Recidivism Variables

A series of ROC analyses were conducted to examine the LSI-OR variables with CP, sexual, violent, and general recidivism for the CPO, SO, and NSO groups. The AUC values for the CPO, SO, and NSO groups on the four recidivism variables are presented in Tables 19 to 22. The LSI-OR variables were not predictive of CP recidivism for the CPO and SO groups. However, the procriminal attitude/orientation ($AUC = .751$), antisocial pattern ($AUC = .715$), and personal problems with criminogenic potential ($AUC = .753$) subscales were all found to be

predictive of CP recidivism for the NSOs. Further, none of the LSI-OR variables were predictive of sexual recidivism among the CPOs and only the final risk levels ($AUC = .592$) and procriminal attitude/orientation ($AUC = .587$) subscales were predictive of sexual recidivism among the SOs. Nearly all of the LSI-OR variables were predictive of sexual recidivism among the NSOs.

The personal problems with criminogenic potential ($AUC = .800$) and special responsivity considerations ($AUC = .746$) subscales were found to be predictive of violent recidivism among the CPOs. As well, the general risk/needs total score ($AUC = .630$), initial risk levels ($AUC = .618$), and the following subscales: family/marital ($AUC = .631$); companions ($AUC = .644$); personal problems with criminogenic potential ($AUC = .699$); history of perpetration ($AUC = .628$); institutional factors ($AUC = .617$); social, health, and mental health ($AUC = .662$); and special responsivity considerations ($AUC = .630$), were all found to be predictive of general recidivism among the CPOs. Further, nearly all of the LSI-OR variables were predictive of violent and general recidivism among both the SOs and NSOs.

Table 19.
AUC values for the CPO, SO, and NSO groups on CP recidivism

LSI-OR Variables	CP Recidivism		
	CPO (<i>n</i> =279) (<i>AUC</i> [95% <i>CI</i>])	SO (<i>n</i> =1511) (<i>AUC</i> [95% <i>CI</i>])	NSO (<i>n</i> = 54590) (<i>AUC</i> [95% <i>CI</i>])
General Risk/Needs	.368 (.136, .599)	.291 (.000, .650)	.583 (.419, .747)
Strength	.508 (.285, .731)	.459 (.181, .738)	.502 (.301, .703)
Initial Risk Level	.434 (.197, .671)	.276 (.000, .581)	.596 (.434, .759)
Final Risk Level	.378 (.176, .580)	.495 (.119, .871)	.591 (.406, .776)
A1: Criminal History	.311 (.093, .529)	.310 (.062, .558)	.495 (.296, .694)
A2: Education/ Employment	.438 (.200, .675)	.411 (.000, .859)	.496 (.333, .659)
A3: Family/Marital	.461 (.215, .707)	.286 (.118, .453)	.525 (.305, .744)
A4: Leisure/ Recreation	.462 (.232, .693)	.575 (.343, .807)	.585 (.394, .777)
A5: Companions	.416 (.210, .622)	.465 (.121, .808)	.555 (.361, .749)
A6: Procriminal Attitude/Orientation	.458 (.195, .721)	.355 (.031, .680)	.751 (.633, .870)
A7: Substance Abuse	.507 (.302, .711)	.221 (.076, .366)	.478 (.320, .636)
A8: Antisocial Pattern	.378 (.161, .594)	.372 (.110, .634)	.715 (.560, .871)
B1: Personal Problems with Criminogenic Potential	.498 (.302, .695)	.530 (.404, .656)	.753 (.535, .971)
B2: History of Perpetration	.456 (.255, .657)	.149 (.051, .248)	.381 (.189, .573)
C1: Institutional Factors	.566 (.356, .777)	.277 (.095, .459)	.542 (.321, .762)

F1: Social, Health, and Mental Health	.478 (.299, .658)	.315 (.109, .522)	.694 (.494, .893)
F2: Barrier to Release	.527 (.302, .752)	.475 (.164, .785)	.494 (.297, .692)
G1: Special Responsivity Considerations	.498 (.278, .719)	.309 (.111, .508)	.609 (.364, .854)

Note: AUCs with $p < .05$ in **bold**. AUC = Area under the Curve. LSI-OR = Level of Service Inventory – Ontario Revision. CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender. CP = child pornography.

Table 20.

AUC values for the CPO, SO, and NSO groups on sexual recidivism

LSI-OR Variables	Sexual Recidivism		
	CPO ($n=279$) (AUC [95% CI])	SO ($n=1511$) (AUC [95% CI])	NSO ($n = 54590$) (AUC [95% CI])
General Risk/Needs Strength	.425 (.197, .652)	.567 (.485, .648)	.639 (.594, .684)
Initial Risk Level	.489 (.284, .694)	.480 (.393, .566)	.449 (.403, .494)
Final Risk Level	.476 (.254, .699)	.555 (.473, .637)	.633 (.587, .678)
A1: Criminal History	.382 (.203, .561)	.592 (.509, .674)	.673 (.631, .715)
A2: Education/ Employment	.368 (.150, .586)	.535 (.446, .624)	.611 (.565, .657)
A3: Family/Marital	.485 (.259, .711)	.533 (.444, .621)	.632 (.586, .677)
A4: Leisure/ Recreation	.493 (.268, .717)	.543 (.458, .627)	.601 (.554, .648)
A5: Companions	.502 (.285, .719)	.523 (.427, .619)	.578 (.530, .627)
A6: Procriminal Attitude/Orientation	.405 (.217, .593)	.495 (.398, .591)	.560 (.510, .610)
A7: Substance Abuse	.519 (.264, .775)	.587 (.501, .672)	.591 (.540, .642)
A8: Antisocial Pattern	.480 (.290, .671)	.535 (.446, .625)	.548 (.498, .598)
B1: Personal Problems with Criminogenic Potential	.412 (.210, .614)	.577 (.493, .660)	.604 (.554, .653)
B2: History of Perpetration	.553 (.355, .751)	.578 (.499, .657)	.680 (.636, .725)
C1: Institutional Factors	.447 (.261, .633)	.455 (.368, .542)	.593 (.543, .642)
F1: Social, Health, and Mental Health	.618 (.412, .825)	.512 (.415, .608)	.586 (.534, .639)
F2: Barrier to Release	.525 (.346, .703)	.514 (.422, .606)	.637 (.590, .683)
G1: Special Responsivity Considerations	.518 (.310, .727)	.488 (.397, .579)	.502 (.453, .551)
	.556 (.337, .775)	.503 (.425, .580)	.619 (.569, .670)

Note: AUCs with $p < .05$ in **bold**. AUC = Area under the Curve. LSI-OR = Level of Service Inventory – Ontario Revision. CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender. CP = child pornography.

Table 21.

AUC values for the CPO, SO, and NSO groups on violent recidivism

LSI-OR Variables	Violent Recidivism		
	CPO	SO	NSO
	(n=279) (AUC [95% CI])	(n=1511) (AUC [95% CI])	(n = 54590) (AUC [95% CI])
General Risk/Needs	.620 (.209, 1.000)	.729 (.679, .780)	.682 (.674, .690)
Strength	.523 (.193, .853)	.492 (.425, .560)	.461 (.453, .469)
Initial Risk Level	.539 (.160, .917)	.712 (.661, .764)	.670 (.662, .678)
Final Risk Level	.704 (.435, .972)	.627 (.565, .688)	.667 (.659, .675)
A1: Criminal History	.598 (.233, .964)	.682 (.612, .751)	.654 (.646, .662)
A2: Education/ Employment	.519 (.186, .852)	.637 (.570, .704)	.637 (.629, .645)
A3: Family/Marital	.682 (.440, .924)	.618 (.550, .686)	.608 (.599, .616)
A4: Leisure/ Recreation	.548 (.161, .934)	.624 (.556, .692)	.594 (.585, .602)
A5: Companions	.730 (.386, 1.00)	.671 (.602, .739)	.611 (.602, .619)
A6: Procriminal Attitude/Orientation	.509 (.205, .813)	.654 (.585, .723)	.596 (.587, .605)
A7: Substance Abuse	.669 (.345, .993)	.649 (.584, .713)	.617 (.608, .625)
A8: Antisocial Pattern	.362 (.090, .633)	.651 (.583, .719)	.625 (.616, .634)
B1: Personal Problems with Criminogenic Potential	.800 (.585, 1.00)	.684 (.621, .747)	.665 (.657, .673)
B2: History of Perpetration	.709 (.409, 1.00)	.671 (.597, .744)	.627 (.619, .636)
C1: Institutional Factors	.445 (.016, .874)	.615 (.540, .691)	.572 (.562, .581)
F1: Social, Health, and Mental Health	.591 (.382, .801)	.568 (.503, .633)	.614 (.605, .622)
F2: Barrier to Release	.455 (.155, .755)	.521 (.448, .593)	.505 (.496, .513)
G1: Special Responsivity Considerations	.746 (.511, .981)	.618 (.553, .683)	.597 (.588, .606)

Note: AUCs with $p < .05$ in **bold**. AUC = Area under the Curve. LSI-OR = Level of Service Inventory – Ontario Revision. CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender. CP = child pornography.

Table 22.

AUC values for the CPO, SO, and NSO groups on general recidivism

LSI-OR Variables	General Recidivism		
	CPO	SO	NSO
	(n=279) (AUC [95% CI])	(n=1511) (AUC [95% CI])	(n = 54590) (AUC [95% CI])
General Risk/Needs	.630 (.508, .753)	.747 (.713, .782)	.742 (.738, .747)
Strength	.518 (.399, .638)	.461 (.421, .501)	.443 (.438, .448)
Initial Risk Level	.618 (.508, .733)	.733 (.699, .768)	.727 (.722, .732)
Final Risk Level	.568 (.449, .687)	.662 (.625, .698)	.713 (.709, .718)
A1: Criminal History	.581 (.437, .725)	.697 (.657, .737)	.707 (.702, .712)
A2: Education/ Employment	.549 (.430, .667)	.671 (.631, .711)	.681 (.676, .686)

A3: Family/Marital	.631 (.520, .741)	.614 (.573, .654)	.615 (.609, .620)
A4: Leisure/ Recreation	.604 (.490, .719)	.632 (.592, .671)	.631 (.626, .636)
A5: Companions	.644 (.522, .767)	.678 (.636, .719)	.665 (.660, .670)
A6: Procriminal Attitude/Orientation	.568 (.443, .694)	.643 (.601, .686)	.630 (.624, .635)
A7: Substance Abuse	.585 (.469, .701)	.684 (.644, .724)	.659 (.654, .664)
A8: Antisocial Pattern	.559 (.438, .679)	.658 (.617, .698)	.671 (.666, .677)
B1: Personal Problems with Criminogenic Potential	.699 (.577, .821)	.683 (.644, .721)	.673 (.667, .678)
B2: History of Perpetration	.628 (.502, .754)	.613 (.569, .658)	.620 (.614, .625)
C1: Institutional Factors	.617 (.501, .734)	.621 (.577, .665)	.598 (.592, .604)
F1: Social, Health, and Mental Health	.662 (.548, .775)	.556 (.514, .599)	.624 (.619, .630)
F2: Barrier to Release	.495 (.377, .613)	.521 (.478, .565)	.507 (.502, .513)
G1: Special Responsivity Considerations	.630 (.511, .749)	.595 (.554, .637)	.607 (.602, .613)

Note: AUCs with $p < .05$ in **bold**. AUC = Area under the Curve. LSI-OR = Level of Service Inventory – Ontario Revision. CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender. CP = child pornography.

3.7.1 Summary.

A summary table of the ROC analyses of the LSI-OR total score and risk levels with CP, sexual, violent, and general recidivism are provided in Table 23. Overall, the LSI-OR total score and risk levels were not predictive of CP, sexual, and violent recidivism for the CPO group; whereas, the general risk/needs total score and initial risk level was predictive of general recidivism for the CPOs. The same trend was found when examining the individual subscales of the LSI-OR for CP and sexual recidivism with the CPOs. However, a couple LSI-OR individual subscales were predictive of violent recidivism and many LSI-OR individual subscales were predictive of general recidivism with the CPOs.

The LSI-OR total score and risk levels were not predictive of CP recidivism with the SOs and NSOs and only a few LSI-OR individual subscales were found to be predictive of CP recidivism with the NSO sample. As well, the LSI-OR total score and risk levels were predictive of sexual, violent, and general recidivism for the SOs and NSOs, with the exception of the total score and the initial risk levels of the LSI-OR for sexual recidivism for the SOs. Similarly, most of the individual subscales of the LSI-OR were found to be predictive of sexual, violent, and general recidivism for the SOs and NSOs; however, only the final risk levels and the procriminal attitude/orientations subscale were predictive of sexual recidivism among the SOs. Please refer

to Figures 6 to 17 in Appendix B where the ROC curve graphs of the LSI-OR total score and risk levels are presented for the four types of recidivism for each of the offender groups.

Table 23.

AUC values for the CPO, SO, and NSO groups on recidivism variables

LSI-OR Variables & Recidivism Type	CPO (AUC [95% CI])	SO (AUC [95% CI])	NSO (AUC [95% CI])
CP Recidivism:			
General Risk/Needs	.368 (.136, .599)	.291 (.000, .650)	.583 (.419, .747)
Initial Risk Level	.434 (.197, .671)	.276 (.000, .581)	.596 (.434, .759)
Final Risk Level After Override	.378 (.176, .580)	.495 (.119, .871)	.591 (.406, .776)
Sexual Recidivism:			
General Risk/Needs	.425 (.197, .652)	.567 (.485, .648)	.639 (.594, .684)
Initial Risk Level	.476 (.254, .699)	.555 (.473, .637)	.633 (.587, .678)
Final Risk Level After Override	.382 (.203, .561)	.592 (.509, .674)	.673 (.631, .715)
Violent Recidivism:			
General Risk/Needs	.620 (.209, 1.000)	.729 (.679, .780)	.682 (.674, .690)
Initial Risk Level	.539 (.160, .917)	.712 (.661, .764)	.670 (.662, .678)
Final Risk Level After Override	.704 (.435, .972)	.627 (.565, .688)	.667 (.659, .675)
General Recidivism:			
General Risk/Needs	.630 (.508, .753)	.747 (.713, .782)	.742 (.738, .747)
Initial Risk Level	.618 (.508, .733)	.733 (.699, .768)	.727 (.722, .732)
Final Risk Level After Override	.568 (.449, .687)	.662 (.625, .698)	.713 (.709, .718)

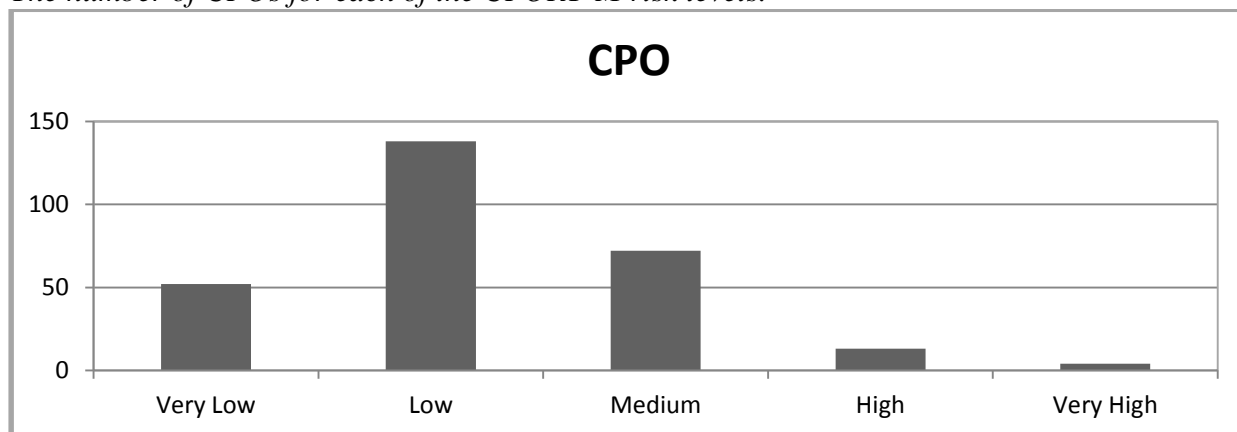
Note: AUCs with $p < .05$ in **bold**. AUC = Area under the Curve. LSI-OR = Level of Service Inventory – Ontario Revision. CPO = child pornography offender. SO = sexual offender. NSO = non-sexual offender. CP = child pornography.

3.8 CPORT-M

To reiterate, the five items used in the CPORT-M were age, prior criminal history, any contact sexual offending, any failure on conditional release, and any indication and/or admission of pedophilic or hebephilic sexual interests. The CPORT-M was only applied to the 279 CPOs. A total of 110 (39.4%) CPOs were rated as high risk on offender age (assessed as high risk if they were 35 years of age or younger). In addition, a total of 180 (64.5%) CPOs had a prior criminal history and 17 (6.1%) CPOs had prior contact sexual offences. As well, ten (3.6%) CPOs were previously unsuccessful on conditional release and 20 (7.2%) CPOs were found to have pedophilic or hebephilic sexual interests.

The CPORT-M items were summed together to create five risk levels (very low, low, medium, high, and very high). An offender who scored zero on the CPORT-M was assigned to the very low risk group; an offender who scored one on the CPORT-M was assigned to the low risk group; an offender who scored two on the CPORT-M was deemed medium risk; an offender who scored three was classified as high risk; and an offender who scored four or five was assigned to the very high risk group. However, none of the CPOs scored five. A total of 52 (18.6%) CPOs were very low risk on the CPORT-M, 138 (49.5%) were low risk, 72 (25.8%) CPOs were medium risk, 13 (4.7%) were high risk, and four (1.4%) were very high risk. As illustrated in Figure 18, the majority of the CPOs were low risk.

Figure 18.
The number of CPOs for each of the CPORT-M risk levels.



Note: CPORT-M = Child Pornography Offender Risk Tool – Modified. CPO = child pornography offender.

3.9 Correlations between CPORT-M and Recidivism Variables

The recidivism rates and correlations between the CPORT-M and CP, sexual, violent, and general recidivism were examined for the CPOs to assess the applicability of the CPORT-M to this group of offenders. It is important to note that although correlations were conducted for all four recidivism variables, the results must be taken with caution for CP and sexual recidivism due to the low base rates (i.e., below 10%) which can result in a lack of statistical power to detect an association. Recidivism rates are presented as a function of CPORT-M risk levels in Table 24. As expected, the lower risk CPOs had lower recidivism rates compared to the higher risk CPOs. Interestingly, the very low risk CPOs had higher recidivism rates compared to the low risk CPOs.

Table 24.

Recidivism rates by CPORT-M risk levels for the CPOs

CPORT-M Risk Levels	Types of Recidivism			
	CP n (%)	Sexual n (%)	Violent n (%)	General n (%)
Very Low (n = 52)	2 (3.8%)	2 (3.8%)	1 (1.9%)	3 (5.8%)
Low (n = 138)	2 (1.4%)	2 (1.4%)	1 (0.7%)	7 (5.1%)
Medium (n = 72)	2 (2.8%)	3 (4.2%)	1 (1.4%)	8 (11.1%)
High (n = 13)	1 (7.7%)	1 (7.7%)	0 (0%)	5 (38.5%)
Very High (n = 4)	0 (0%)	0 (0%)	0 (0%)	2 (50%)

Note: CPORT-M = Child Pornography Offender Risk Tool – Modified. CPO = child pornography offender. CP = Child Pornography.

Correlations with the primary recidivism variables were calculated for each of the five items of the CPORT-M and the CPORT-M total score. There were no significant correlations between the CPORT-M items and both CP and violent recidivism. Further, the only correlation that was significant for sexual recidivism among the CPOs was any failure on conditional release. Whereas, most of the correlations for general recidivism among the CPOs were significant, with the exception of offender age and pedophilic or hebephilic sexual interests (Table 25). The CPORT-M item any failure on conditional release was the most strongly related to general recidivism.

Table 25.

Correlations between CPORT-M variables with recidivism variables for the CPOs

CPORT-M Variables	Types of Recidivism			
	CP (n=279)	Sexual (n=279)	Violent (n=279)	General (n=279)
CPORT-M Total Score	.015	.034	-.026	.234***
Offender Age	.058	.037	-.013	.055
Prior Criminal History	-.025	-.007	.005	.128*
Any Contact Sexual Offences	-.041	-.044	-.027	.182**
Any Failure on Conditional Release	.092	.198***	-.020	.277***
Pedophilic/Hebephilic Interests	-.045	-.048	-.029	.059

Note: CPORT-M = Child Pornography Offender Risk Tool – Modified. CPO = child pornography offender. CP = Child Pornography.

***Correlation is significant at the .001 level (2-tailed)

**Correlation is significant at the .01 level (2-tailed)

* Correlation is significant at the .05 level (2-tailed)

3.10 ROC Coefficients for CPORT-M Variables with Recidivism Variables

A series of ROC analyses were conducted to examine the CPORT-M variables with CP, sexual, violent, and general recidivism for the CPOs. The AUC values for the recidivism variables are presented in Table 26. An analysis of the CPORT-M total score on general recidivism produced a ROC of $AUC = .680$ indicating that it had moderate predictive accuracy of general recidivism among the CPOs. In addition, prior criminal history was moderately able to predict general recidivism among the CPOs ($AUC = .607$). However, the CPORT-M total score and prior criminal history were not predictive of CP, sexual, and violent recidivism among the CPOs. Likewise, the remaining CPORT-M items (i.e., offender age, any contact sexual offences, any failure on conditional release, and pedophilic/hebephilic interests) were not predictive of CP, sexual, violent, or general recidivism for the CPOs. In sum, only the CPORT-M total score and prior criminal history were able to predict general recidivism in the CPO sample with moderate accuracy. Figures 19 to 22 in Appendix B illustrate the ROC curves for the CPORT-M total score with the recidivism variables among the CPOs.

Table 26.
AUC values for the CPORT-M on recidivism variables

CPORT-M Variables	Types of Recidivism			
	CP (AUC [95% CI])	Sexual (AUC [95% CI])	Violent (AUC [95% CI])	General (AUC [95% CI])
CPORT-M Total Score	.520 (.266, .773)	.557 (.324, .790)	.445 (.093, .797)	.680 (.555, .805)
Offender Age	.591 (.376, .806)	.554 (.350, .759)	.469 (.146, .792)	.547 (.428, .667)
Prior Criminal History	.462 (.242, .682)	.490 (.285, .694)	.511 (.184, .838)	.607 (.501, .713)
Any Contact Sexual Offences	.469 (.265, .673)	.469 (.277, .660)	.469 (.160, .778)	.576 (.448, .705)
Any Failure on Conditional Release	.555 (.321, .788)	.610 (.383, .838)	.482 (.164, .799)	.590 (.460, .720)
Pedophilic/Hebephilic Interests	.463 (.261, .665)	.463 (.274, .652)	.464 (.158, .770)	.527 (.404, .649)

Note: AUC = Area under the Curve. CPORT-M = Child Pornography Offender Risk Tool – Modified. CP = child pornography.
AUC $p < .05$ in **bold**.

3.11 LSI-OR and CPORT-M ROC Analyses

ROC analyses were conducted for the individual items of the CPORT-M and the LSI-OR total score and risk levels. Table 27 illustrates the AUC values for these variables on the four types of recidivism and the ROC curve graphs are illustrated in Figures 23 to 26 in Appendix B. The LSI-OR variables and the individual items of the CPORT-M were not predictive of CP, sexual, and violent recidivism with the CPO sample. Conversely, the general risk/needs total score and the initial risk levels of the LSI-OR and the CPORT-M item prior criminal history were moderately predictive of general recidivism with the CPO sample.

Table 27.

AUC values for the LSI-OR and CPORT-M variables with the recidivism variables for CPOs

LSI-OR Variables:	Types of Recidivism			
	CP (AUC [95% CI])	Sexual (AUC [95% CI])	Violent (AUC [95% CI])	General (AUC [95% CI])
General Risk/Needs	.368 (.136, .599)	.425 (.197, .652)	.620 (.209, 1.000)	.630 (.508, .753)
Initial Risk Level	.434 (.197, .671)	.476 (.254, .699)	.539 (.160, .917)	.618 (.503, .733)
Final Risk Level	.378 (.176, .580)	.382 (.203, .561)	.704 (.435, .972)	.568 (.449, .687)
CPORT-M Variables:				
Offender Age	.591 (.376, .806)	.554 (.350, .759)	.469 (.146, .792)	.547 (.428, .667)
Prior Criminal History	.462 (.242, .682)	.490 (.285, .694)	.511 (.184, .838)	.607 (.501, .713)
Any Contact Sexual Offences	.469 (.265, .673)	.469 (.277, .660)	.469 (.160, .778)	.576 (.448, .705)
Any Failure on Conditional Release	.555 (.321, .788)	.610 (.383, .838)	.482 (.164, .799)	.590 (.460, .720)
Pedophilic/hebephilic Sexual Interests	.463 (.261, .665)	.463 (.274, .652)	.464 (.158, .770)	.527 (.404, .649)

Note: AUC = Area under the Curve. LSI-OR = Level of Service Inventory – Ontario Revision. CPORT-M = Child Pornography Offender Risk Tool – Modified. CPO = child pornography offender. CP = child pornography.

AUCs $p < .05$ in **bold**

3.12 Logistic Regression of LSI-OR and CPORT-M on CPO's Recidivism

As well, binary logistic regression using the enter method was also conducted for the four primary recidivism variables for the CPO sample with the CPORT-M individual items and the LSI-OR individual subscales. The parameter estimates, standard errors, Wald χ^2 , significance

level, and the exponentiation of the coefficients are illustrated in Tables 28 - 31. There was no significant predictor for violent recidivism. However, the significant predictor of CP recidivism was any failure on conditional release. As well, for sexual recidivism, the significant predictors included any failure on conditional release and the procriminal attitude/orientation subscales. Lastly, the significant predictors of general recidivism was antisocial patterns and personal problems with criminogenic potential. However, the remaining CPORT-M and LSI-OR variables did not emerge as significant predictors for the recidivism variables.

Table 28

Logistic regression applying CPORT-M and LSI-OR variables to CP recidivism among CPOs

Predictor Variables:	Estimate (β)	SE	Wald χ^2	p-value	Exp (β)
CPORT-M Variables:					
Offender Age	.954	.880	1.174	.279	2.596
Prior Criminal History	-.024	.900	.001	.979	.976
Any Contact Sexual Offences	-14.935	7996.157	.000	.999	.000
Any Failure on Conditional Release	4.436	2.277	3.795	.051	84.412
Pedophilic/hebephilic Sexual Interests	-16.190	7188.807	.000	.998	.000
LSI-OR Variables:					
A1: Criminal History	-.952	.688	1.914	.167	.386
A2: Education/Employment	-.058	.230	.064	.801	.944
A3: Family/Marital	.128	.418	.093	.760	1.136
A4: Leisure/Recreation	-.242	.634	.146	.703	.785
A5: Companions	-.150	.796	.035	.851	.861
A6: Procriminal Attitude/Orientations	.938	.662	2.003	.157	2.554
A7: Substance Abuse	.098	.293	.112	.738	1.103
A8: Antisocial Pattern	-1.738	1.274	1.862	.172	.176
B1: Personal Problems with Criminogenic Potential	.140	.396	.126	.723	1.151
B2: History of Perpetration	-.031	.978	.001	.975	.969

Note. SE = Standard error. Exp (β) = Exponentiation of the coefficients. CPORT-M = Child Pornography Offender Risk Tool – Modified. CP = child pornography. Chi square = 11.839, $p = .691$. Cox & Snell R square = .042.

Table 29

Logistic regression applying CPORT-M and LSI-OR variables to sexual recidivism among CPOs

Predictor Variables:	Estimate (β)	SE	Wald χ^2	p-value	Exp (β)
CPORT-M Variables:					
Offender Age	.738	.890	.689	.407	2.093
Prior Criminal History	.122	.962	.016	.899	1.130
Any Contact Sexual Offences	-12.882	7204.536	.000	.999	.000
Any Failure on Conditional Release	8.737	3.703	5.566	.018	6227.619
Pedophilic/hebephilic Sexual Interests	-15.895	6377.604	.000	.998	.000
LSI-OR Variables:					
A1: Criminal History	-1.299	.799	2.644	.104	.273
A2: Education/Employment	-.049	.229	.047	.829	.952
A3: Family/Marital	.132	.415	.102	.750	1.141
A4: Leisure/Recreation	-.198	.633	.097	.755	.821
A5: Companions	-1.051	1.263	.692	.405	.350
A6: Procriminal Attitude/Orientations	1.421	.724	3.851	.050	4.142
A7: Substance Abuse	.025	.314	.006	.936	1.025
A8: Antisocial Pattern	-2.835	1.582	3.213	.073	.059
B1: Personal Problems with Criminogenic Potential	.247	.406	.369	.544	1.280
B2: History of Perpetration	-.783	1.112	.496	.481	.457

Note. SE = Standard error. Exp (β) = Exponentiation of the coefficients. CPORT-M = Child Pornography Offender Risk Tool – Modified.

Chi square = 22.78, $p = .089$. Cox & Snell R square = .078.

Table 30

Logistic regression applying CPORT-M and LSI-OR variables to violent recidivism among CPOs

Predictor Variables:	Estimate (β)	SE	Wald χ^2	p-value	Exp (β)
CPORT-M Variables:					
Offender Age	-30.799	4122.704	.000	.994	.000
Prior Criminal History	-25.896	4627.220	.000	.996	.000
Any Contact Sexual Offences	-79.274	7718.571	.000	.992	.000

Any Failure on Conditional Release	.705	9484.092	.000	1.000	2.023
Pedophilic/hebephilic Sexual Interests	-19.235	11546.327	.000	.999	.000
LSI-OR Variables:					
A1: Criminal History	-5.504	2757.650	.000	.998	.004
A2: Education/Employment	-5.547	1557.710	.000	.997	.004
A3: Family/Marital	-4.473	2017.515	.000	.998	.011
A4: Leisure/Recreation	-4.664	1479.104	.000	.997	.009
A5: Companions	32.466	2310.521	.000	.989	1.259E+14
A6: Procriminal Attitude/Orientations	8.270	4743.578	.000	.999	3904.491
A7: Substance Abuse	1.550	903.735	.000	.999	4.710
A8: Antisocial Pattern	-89.055	6528.729	.000	.989	.000
B1: Personal Problems with Criminogenic Potential	26.463	1050.356	.001	.980	3.111E+11
B2: History of Perpetration	28.541	1765.945	.000	.987	2.484E+12

Note. SE = Standard error. Exp (β) = Exponentiation of the coefficients. CPORT-M = Child Pornography Offender Risk Tool – Modified.

Chi square = 33.163, $p = .004$. Cox & Snell R square = .112.

Table 31

Logistic regression applying CPORT-M and LSI-OR variables to general recidivism among CPOs

Predictor Variables:	Estimate (β)	SE	Wald χ^2	p -value	Exp (β)
CPORT-M Variables:					
Offender Age	.528	.513	1.060	.303	1.696
Prior Criminal History	.640	.628	1.038	.308	1.897
Any Contact Sexual Offences	.694	.974	.507	.476	2.001
Any Failure on Conditional Release	1.366	.957	2.040	.153	3.920
Pedophilic/hebephilic Sexual Interests	-.396	1.161	.116	.733	.673
LSI-OR Variables:					
A1: Criminal History	.029	.211	.019	.891	1.029
A2: Education/Employment	-.240	.133	3.250	.071	.787
A3: Family/Marital	.199	.247	.646	.422	1.220

A4: Leisure/Recreation	.265	.403	.434	.510	1.304
A5: Companions	.469	.364	1.657	.198	1.598
A6: Procriminal Attitude/Orientations	.034	.317	.011	.915	1.034
A7: Substance Abuse	.050	.162	.097	.756	1.052
A8: Antisocial Pattern	-1.055	.536	3.871	.049	.348
B1: Personal Problems with Criminogenic Potential	.579	.192	9.122	.003	1.784
B2: History of Perpetration	.242	.402	.363	.547	1.274

Note. SE = Standard error. Exp (β) = Exponentiation of the coefficients. CPORT-M = Child Pornography Offender Risk Tool – Modified. Chi square = 36.783, $p = .001$. Cox & Snell R square = .124.

3.13 LSI-OR and CPORT-M – Summary

To assess the predictive accuracies of both the LSI-OR and the CPORT-M on the various types of recidivism, for the CPOs, summary tables, as well a discussion of the convergent validity between the two risk assessment tools, are provided below. Table 32 provides the summary table of the correlations and the AUC values between the CPORT-M and the LSI-OR with the recidivism variables for the CPO group. As illustrated, the only significant correlations were among general recidivism and both the general risk/needs total score and the initial risk levels of the LSI-OR and the CPORT-M total score. The CPORT-M total score was more strongly related to general recidivism compared to the LSI-OR variables. When examining the predictive validity of CP, sexual, and violent recidivism for both tools, none of the tools were found to be predictive for the CPOs. In contrast, both the general risk/needs total score ($AUC = .630$) and the initial risk levels ($AUC = .618$) of the LSI-OR and the CPORT-M total score ($AUC = .680$) were found to have moderate predictive accuracy of general recidivism among the CPOs, with the CPORT-M performing slightly better.

Table 32.

Correlations and AUC values for the LSI-OR and CPORT-M variables with recidivism variables for CPOs

LSI-OR and CPORT-M Variables	Types of Recidivism			
	CP ($n=279$)	Sexual ($n=279$)	Violent ($n=279$)	General ($n=279$)
Correlations:				
General Risk/Needs	-.050	-.030	.044	.163**

Initial Risk Level	-.032	-.014	.002	.129*
Final Risk Level	-.072	-.071	.079	.072
CPORT-M Total Score	.015	.034	-.026	.234***
AUC Values (95% CI):				
General Risk/Needs	.368 (.136, .599)	.425 (.197, .652)	.620 (.209, 1.000)	.630 (.508, .753)
Initial Risk Level	.434 (.197, .671)	.476 (.254, .699)	.539 (.160, .917)	.618 (.508, .733)
Final Risk Level	.378 (.176, .580)	.382 (.203, .561)	.704 (.435, .972)	.568 (.449, .687)
CPORT-M Total Score	.520 (.266, .773)	.557 (.324, .790)	.445 (.093, .797)	.680 (.555, .805)

Note: AUC = Area under the Curve. LSI-OR = Level of Service Inventory – Ontario Revision. CPORT-M = Child Pornography Offender Risk Tool – Modified. CPO = child pornography offender. CP = child pornography.

***Correlation is significant at the .001 level (2-tailed)

**Correlation is significant at the .01 level (2-tailed).

* Correlation is significant at the .05 level (2-tailed)

AUC $p < .05$ in **bold**.

3.14 Convergent Validity between the LSI-OR and the CPORT-M

To assess convergent validity, the tools were correlated with each other and the strength of the relationships were used to determine whether the tools converged. The CPORT-M total score was significantly correlated with the general risk/needs total score ($r = .320, p < .001$), the initial risk level ($r = .287, p < .001$), and the final risk level after the override ($r = .153, p = .010$). Further, the individual items of the CPORT-M were also significantly related to both the general risk/needs total score and the initial risk level, with the exception of offender age. As well, only any contact sexual offending and any failure on conditional release were related to the final risk level of the LSI-OR. Thus, the CPORT-M individual items were related more to the general risk/needs total score and the initial risk levels of the LSI-OR than to the final risk levels.

To further investigate, the individual subscales of the LSI-OR were correlated with the individual CPORT-M variables (Table 33). Criminal history, education/employment, personal problems with criminogenic potential, institutional factors, and social, health, and mental health subscales were associated with the majority of the CPORT-M items, with the exception of offender age. Interestingly, the substance abuse subscale was not related to any of the CPORT-M items or total score. In conclusion, the tools were related to each other.

Table 33.

Correlations between the LSI-OR and CPORT-M variables for the CPOs (n = 279)

LSI-OR Variables	CPORT-M Variables					
	Offender Age (r)	Prior Criminal History (r)	Any Contact Sexual Offences (r)	Any Failure on Conditional Release (r)	Pedophilic/Hebephilic Sexual Interests (r)	CPORT -M Total Score (r)
General Risk/Needs Strength	-.053	.163**	.358***	.334***	.275***	.320***
Initial Risk Level	.073	-.222***	-.042	-.054	-.050	-.123*
Final Risk Level	-.034	.150*	.300***	.260***	.263***	.287***
A1: Criminal History	-.043	.092	.192***	.181**	.106	.153**
A2: Education/Employment	-.083	.206***	.303***	.408***	.262***	.324***
A3: Family/Marital	.065	.178**	.228***	.157**	.163**	.287***
A4: Leisure/Recreation	-.182**	.071	.210***	.135*	.169**	.076
A5: Companions	-.002	.082	.169**	.162**	.105	.161**
A6: Procriminal Attitude/Orientation	.017	.059	.296***	.262***	.173**	.238***
A7: Substance Abuse	-.101	.000	.301***	.247***	.303***	.173**
A8: Antisocial Pattern	.001	.045	.053	.070	-.013	.052
B1: Personal Problems with Criminogenic Potential	-.089	.023	.302***	.316***	.294***	.206***
B2: History of Perpetration	-.023	.145*	.316***	.352***	.271***	.318***
C1: Institutional Factors	-.152*	.108	.417***	.340***	.388***	.284***
F1: Social, Health, and Mental Health	-.065	.245***	.232***	.274***	.305***	.320***
F2: Barrier to Release	-.099	.126*	.243***	.156**	.169**	.169**
G1: Special Responsivity Considerations	-.073	-.239***	.077	.075	.253***	-.062
	-.040	-.055	.163**	.268***	.131*	.090

Note: LSI-OR = Level of Service Inventory – Ontario Revision. CPORT-M = Child Pornography Offender Risk Tool – Modified. CPO = child pornography offender.

***Correlation is significant at the .001 level (2-tailed)

**Correlation is significant at the .01 level (2-tailed)

* Correlation is significant at the .05 level (2-tailed)

4.0 DISCUSSION

The current study examined the predictive validity of both the LSI-OR and the CPORT-M on four primary recidivism variables with CP provincial offenders in Ontario. A total of 279 CPOs, 1,511 CSOs, and 54,590 NSOs were compared to assess the unique differences that exist within these offender populations. The CPOs were convicted of the following index offences: 79% for CPPO, 19% for CPS, 15% for ACP, 5% for CPP, and 2% for CPF (percentages add up to greater than 100% due to offenders having multiple convictions), which is similar to the distribution of index offences found (e.g., Eke et al., 2011; Seto & Eke, 2015) in other CPO samples.

4.1 Demographic Characteristics, Sexual Offender Variable, and LSI-OR Variables

The CPOs were most likely to be older, male, and Caucasian. Similar to past research (e.g., Babchishin et al., 2011; Webb et al., 2007; Wormith et al., 2012a), the CPOs were older than the NSOs, but younger than the SOs. Alternatively, other research (e.g., Seto et al., 2012) found that the CPOs tend to be older than the sexual offenders. A possible explanation may be that this was not the CPOs' first index offence of CP charges, as they may have encountered CP charges earlier in their lives. Previous researchers (e.g., Babchishin et al., 2011; Burke et al., 2002; Seto & Eke, 2015; Webb et al., 2007) have also found that CPOs are male and Caucasian. Further, Webb et al. (2007) found that the sexual offenders likely come from more mixed ethnic backgrounds, whereas CPOs are most often Caucasian; again, the CPOs in this study tended to be predominantly Caucasian compared to the SOs and the NSOs. There was also a large representation of Aboriginal offenders in all of the offender groups, which was also found in past research (e.g., Wormith et al., 2012a) that used a similar sample of Ontario provincial offenders. This was not surprising, as Aboriginal peoples continue to be overrepresented in Ontario's correctional system, as is the case nationally (MCSCS, 2011).

The CPOs and SOs had higher offence severity levels compared to the NSOs (similar to past findings; Wormith et al., 2012a), which was not surprising given the severity levels of both the non-violent and violent sexual offences captured by these offender groups. This also corresponded with significantly longer sentence lengths for both the CPOs and SOs, in comparison to the NSOs. Conversely, Girard and Wormith (2004) found that in their sample, the sexual offenders' sentence length did not differ from the sentence length of the non-sexual

offenders. A possible explanation for this difference may depend on whether their sexual and non-sexual samples significantly differed on the initial offence severity levels; whereas, in this study, the two offender groups did differ. In addition, the MCSCS did not capture 4.7% of the CPOs and 11.3% of the SOs as having a current (or previous) sexual offence. However, these sexual offences were captured by their MSO on file. Interestingly, 4% of the NSOs were flagged as having a current and/or previous sexual offence; thus, the NSO sample for this study was not a 'true' NSO sample, as 2,184 offenders would have been categorized as either CPOs or SOs if the study would have been able to capture offenders' historical offences. Other researchers who have reported CPOs historical offences found that 18% had prior contact sexual offence histories (Eke et al., 2011), as well, Seto and Eke (2015) found that 15% had prior sexual offences and 5% had prior CP offences.

The CPOs scored the lowest on the LSI-OR general risk/needs total score, followed by the SOs and the NSOs, resulting in the CPOs being classified as having the lowest risk. In addition, the CPOs and the SOs scored lower on the LSI-OR general risk/needs subscales, with the exception of the leisure/recreation subscale (CPOs scored highest) and the procriminal attitude/orientation and antisocial pattern subscales (CPOs scored higher than the NSOs but lower than the SOs), and a few of the strength scores, compared to the NSOs. Interestingly, Wormith et al. (2012a) found that the sexual offenders in their sample, scored significantly higher on the general risk/needs score and the initial risk level of the LSI-OR, compared to the non-sexual offenders. As well, Girard and Wormith (2004) found that the general risk/needs score in their sample of sexual offenders was no different compared to their non-sexual offender sample. Overall, the SO sample in the current study were lower risk offenders compared to the sexual offender samples from past research. The LSI-OR also indicated that the CPOs had fewer problems with substance abuse, compared to the SOs and NSOs, and lower antisocial tendencies compared to the SOs, replicating past findings (e.g., Babchishin et al., 2011; Elliot et al., 2009).

4.2 Use of the Override

The CPOs were classified as having the lowest risk, based on their initial risk level of the LSI-OR; however, the use of the override feature (provisions within the instrument that allow for a clinical override of the initial risk level, in either direction, to create a final risk level) was used significantly more often to increase the CPOs risk levels, as well as the SOs, resulting in both

having final risk levels (after the override) that were higher than the NSOs. Specifically, it was found that the override feature was used with a total of 8,448 (14.98%) offenders: 50.9% CPOs, 41.6% SOs, and 14.1% NSOs. Therefore, based on practitioners' use of the override, these offenders' increased risk levels could possibly result in the ramifications that accompany being classified as having a higher risk, such as lower chances of receiving conditional sentences and, when in the community, possibly lengthier and more intensive supervision orders. Similarly, Wormith et al. (2012a) found that the use of the override feature was used significantly more often with the sexual offenders in their study. Further, they provided explanations as to why practitioners' maybe accommodating their own theories about sexual offenders' risk, may increase the risk of the CPO and sexual offender samples. They stated that practitioners may suspect that the LSI-OR underestimates the risk of a sexual offender who does not have an extensive criminal history or that the presence of higher scores on antisocial patterns and procriminal attitudes are not given enough weight in the LSI-OR scoring scheme. This may possibly be the case, as it is illustrated in this study that the CPOs and SOs did have lower scores on the criminal history subscale, as well as higher scores on both the procriminal attitude and antisocial patterns subscale.

Further, Wormith et al. (2012a) found that the increase in an offender's risk level raises questions about the value of the override feature, as there tends to be a decrease of the LSI-OR's predictive accuracy of general, sexual, and violent recidivism. Similar findings were found in this study but only with respect to violent and general recidivism for the CPO, SO, and NSO samples. For example, in the CPO sample, the initial risk levels of the LSI-OR were predictive of general recidivism ($AUC = .618$); whereas, the final risk levels were not predictive at all. Further, in the SO and NSO samples, there was a decrease in predictive accuracy for the final risk levels, in comparison to the initial risk levels, for both violent (SO: $AUC = .627$ versus $AUC = .712$; NSO: $AUC = .667$ versus $AUC = .670$) and general recidivism (SO: $AUC = .662$ versus $AUC = .733$; NSO: $AUC = .713$ versus $AUC = .727$). Conversely, in the NSO sample, there was a decrease in predictive accuracy from the initial risk levels to the final risk levels for sexual recidivism in the NSO sample, although both were significant, and in the SO sample only the final risk level was predictive of sexual recidivism. Thus, the use of the override feature only benefited the predictive accuracy of the LSI-OR with sexual recidivism among the SOs and

NSOs. Wormith et al. (2012a) suggested that the use of the override to lower the risk levels of the SOs may be the appropriate procedure. This suggestion may have had some impact on assessors' appropriate use of the override in predicting recidivism, but only for sexual recidivism. Use of the override in predicting CPOs' general recidivism remains problematic as the AUC was no longer significant after its use, which might be called excessive, as over half of the CPOs experienced an increased risk level due to the override. Perhaps there is too much focus on the CP offences as 50.2% of the CPOs experienced an increased risk level, in comparison to 13.2% of the NSOs.

4.3 Recidivism

The recidivism rates for the total sample were 0.03% for CP, 0.32% for sexual, 8.06% for violent, and 27.04% for general recidivism. Thus, the overall CP and sexual recidivism rates were extremely low. In comparison to the other offender groups, the CPOs had the highest CP and sexual recidivism rates, 2.51% and 2.87%, respectively, and the NSOs had the highest violent (8.2%) and general (27.5%) recidivism rates. Also, survival analyses found that the CPOs recidivated quicker than the other two groups for both CP and sexual recidivism; whereas, the NSOs recidivated quicker for both violent and general recidivism. Even though the CPOs had high CP and sexual recidivism rates compared to the SOs and NSOs, their general recidivism rate (8.96%) was much higher, similar to what has been found previously (e.g., Eke et al., 2011; Seto & Eke, 2005; Wakeling et al., 2011). To remind you, the sexual recidivism variable includes all of the CP recidivists, while the violent recidivism variable includes some of the sexual recidivists, and the general recidivism variable included all of the recidivists.

The follow-up period to capture recidivism was found to be the longest with the CPOs (1,160 days or 3.18 years), in comparison to the SO and NSO groups. Even though, the CPOs had slightly higher sexual recidivism rates compared to the SOs, 2.87% is still much lower than what is reported for other CPO samples, such as 4.6% (Seto et al., 2011), 11% (Eke et al., 2011), and 16% (Seto & Eke, 2015). However, in both of those studies, the follow-up time was approximately six years, which was almost double the follow-up time for this study. Therefore, the longer follow-up time would have allowed for more offenders to recidivate. Even so, Faust et al. (2009) found sexual recidivism rates of 5.7% with their sample of CPO over a similar follow-up period to what was used in this study.

A total of 7 (2.51%) CPOs had recontact CP charges, while this was true for 3 (0.20%) SOs and 8 (0.01%) NSOs, with the majority of all three offender groups recidivating with possession of CP. Similarly, Seto et al. (2011) found that 3.4% of their CPO sample had recontact CP charges. On the other hand, Seto and Eke (2015) found that 12% of their sample was charged with a new CP offence, which was nearly four times greater than what was found in this study. Again, this could be explained by the longer follow-up period in their study. Interestingly, all offender groups had the same average index reoffence severity levels. This means that the majority of the CPOs and SOs were not reoffending with CP and sexual offences, as these offences would result in higher reoffence severity levels. However, even though the offenders had similar reoffence severity levels, the NSOs (which had been assigned lowest risk after the override) received slightly shorter sentence lengths, while the CPOs (who were assigned the highest risk after the override) received the longest sentence lengths. Therefore, all offenders were recidivating with offences at similar severity levels, yet the CPOs were receiving longer sentences in custody when they recidivated, which may be explained by their higher risk levels after the override. It is important to note that because there was such a small number of recidivists for CP, sexual, and violent recidivism among all offender groups, the stability of the findings can be affected as they depended solely on this low number of recidivists.

4.4 CPORT-M

Moving along to the CPORT-M, when examining offender age, 39.4% were 35 years of age and younger; whereas, Seto and Eke (2015) experienced a higher percentage (49%) of their CPO sample being in this age range. The literature on CPOs' prior criminal history discussed earlier reported conflicting findings, yet the findings from the current study were similar to Eke et al. (2011) and Seto and Eke (2015), where more than half (64.5%) of the current CPO sample had prior criminal histories. A higher percentage of CPOs in this study had a prior criminal history, compared to only 47% of CPOs found in Eke et al. (2011) and 41% of CPOs found in Seto and Eke (2015). In addition, a lower number (6.1%) of CPOs were found to have prior contact sexual offences, compared to previous findings, such as 12.5% found in Seto et al. (2011) or 18% found in Seto and Eke. Similarly, only 3.6% of the CPOs were sanctioned for a failure on conditional release, compared to 32% of the CPOs in Eke et al.'s study and 15% in Seto and Eke's study. Furthermore, a small percentage (7.2%) of the CPOs evidenced

pedophilic/hebephilic sexual interests, again, similar to past research (Bourke et al., 2009; Ray, et al., 2014; Seto, 2010; Seto et al., 2006) that reported that the CPOs have a sexual preference for children. However, this was only captured for a small percentage of the sample, compared to Seto and Eke who found 38% of their sample evidencing pedophilic/hebephilic sexual interests. This may be due to how this variable was constructed. For example, this study only could infer sexual interests in children based on four criminal code charges (LCE, LCS, LCF, and SEXI) which explicitly state the child's age. However, Seto et al. (2012) found that the CPOs were more likely to show a pedophilic pattern of sexual arousal during phallometric testing. Thus, different methods to obtain this information may result in a higher percentage of CPOs being captured as having a sexual interest in children. Overall, the CPORT-M classified the majority of the CPOs as low risk, which was similar to the findings of the LSI-OR initial risk levels and to the overall CPORT scores obtained by Seto and Eke.

4.5 Correlations between LSI-OR and CPORT-M and Recidivism Variables

The general risk/needs score of the LSI-OR was correlated with general recidivism for the CPOs ($r = .163$), SOs ($r = .315$), and NSOs ($r = .389$). As well, the general risk/needs score was associated with violent recidivism for the SO ($r = .167$) and NSO ($r = .178$) samples and with sexual recidivism for the NSOs ($r = .024$). The weak correlations for sexual recidivism could be explained by the low base rates (i.e., below 5%) which can result in a lack of statistical power to detect an association, as the AUC values for these variables demonstrated moderate to high predictive accuracies. Similar correlations for the LSI-OR among sexual offenders and non-sexual offender samples were found in past research (Wormith et al., 2012); however, the correlations obtained in the current study were lower in strength (most likely due to the low base rates). Likewise, Girard and Wormith (2004) also found that the general risk/needs score was correlated with general and violent recidivism for both sexual and non-sexual offender groups, although, it was lower for violent recidivism. Unlike past research (e.g., Wormith et al., 2012a), the correlations for the SOs were not higher than the NSOs for general recidivism.

Further, the initial risk levels were more highly associated with both violent (for the SO and NSO samples) and general recidivism (for all offender groups) compared to the final risk levels, similar to past findings (Wormith et al., 2012a). In contrast, the final risk level was correlated more strongly, than the initial risk levels, to sexual recidivism among the SO and NSO

samples. Unfortunately, for the CPO sample, only the correlations between the LSI-OR and general recidivism and between the companions subscale and violent recidivism were significant.

Interestingly, the specific risk/needs subscale, personal problems with criminogenic potential, was correlated ($r = .016, p < .001$) and predictive ($AUC = .753$) of CP recidivism with the NSOs. This subscale of the LSI-OR performed better than both the LSI-OR total score and the CPORT-M. As well, the personal problems with criminogenic potential subscale was more strongly correlated ($r = .036, p < .001$) and predictive ($AUC = .680$) compared to all other LSI-OR variables on sexual recidivism for the NSOs. Further, this subscale also performed well for both the SOs and NSOs on both violent and general recidivism; although, it did not perform better than the general risk/needs total score which is not surprising as the LSI-OR is designed to predict general recidivism among the general offender population.

The overall CPORT-M total score was only correlated with general recidivism ($r = .234$). As for the individual items, any failure on conditional release was associated with sexual ($r = .198$) and general ($r = .277$) recidivism. Further, prior criminal history ($r = .128$) and any contact sexual offences ($r = .182$) were also correlated with general recidivism. As illustrated, the CPORT-M total score was the most strongly associated with general recidivism with the CPO sample. Overall, for the CPOs, both tools were related to general recidivism, with the CPORT-M total score being more strongly related to general recidivism for the CPOs. This may be due to the CPORT being designed specifically for CPOs to assess risk of recidivism, whereas the LSI-OR was designed for use with the general offender population (not on a specific subgroup of offenders) to assess risk of general recidivism. As well, any failure on conditional release of the CPORT-M was related to sexual recidivism whereas the companions subscale of the LSI-OR was related to violent recidivism.

4.6 Hypotheses

4.6.1 Hypothesis 1.

It was hypothesized that the LSI-OR would be best able to predict general recidivism among all of the groups of offenders. The general risk/needs total score had the highest predictive accuracy with general recidivism among the SO ($AUC = .747$) and NSO ($AUC = .742$) samples. Also, the initial risk levels had the highest predictive accuracy with general recidivism among the SO ($AUC = .733$) and NSO samples ($AUC = .742$) and the final risk level had the

highest predictive accuracy with general recidivism among the NSO sample ($AUC = .713$). Further, only the general risk/needs score and the initial risk level were predictive of general recidivism with the CPO sample ($AUC = .630$ and $AUC = .618$, respectively). Overall, the LSI-OR was predictive of general, sexual, and violent recidivism, but it performed the best for general recidivism among all offender groups. Thus, this prediction was supported. The implications of these findings include that the LSI-OR can continue to be used with sexual and non-sexual offenders to assess risk of sexual, violent, and general recidivism but should only be used with CPOs to assess risk of general recidivism, as it was not predictive for the other types of recidivism.

4.6.2 Hypothesis 2.

It was also predicted that the LSI-OR would have moderate predictive validity with respect to CP recidivism among the CPOs. It was found that the LSI-OR was not predictive of CP recidivism with any of the offender samples. As well, none of the correlations between the LSI-OR and CP recidivism were significantly related among the CPOs. Overall, this hypothesis was not supported. This finding was intriguing because the prediction was based on a considerable body of literature (e.g., Andrews & Bonta, 1995; Flores et al., 2006; Gendreau et al., 1996; Girard & Wormith, 2004; Hogg, 2011; Olver, et al., 2014; Wormith et al., 2015) that has evidenced that the LSI and its subsequent versions demonstrate predictive validity with various offender subgroups (e.g., women, Aboriginal offenders, sexual offenders). So why would the LSI-OR not be predictive of CP recidivism with any of the offender samples? Could the CP recidivism rates be so low that it is impossible to detect an association? Further, is the LSI-OR missing critical information with the absence of a sexual subscale or section? Or is there something unique with this offender subgroup that makes recidivism prediction near impossible with the LSI-OR? Possible reasons are provided below.

The CP recidivism rates were extremely low (i.e., 0.03%). Seto and Eke (2015) explained that low base rates of CP recidivism can result in low statistical power to detect an association, suggesting that it could be very difficult to validate a risk assessment tool for this specific population. Similarly, other risk assessment tools such as the RM2000, Stable-2000 (Webb et al., 2007), Static-99, VASOR (Seto et al., 2012), and the CPORT (Seto & Eke, 2015) were not predictive for CPOs and provided inconsistent results. Some of the authors explained

that the risk assessment tools were not predictive due to the low base rates of recidivism. This may explain why the LSI-OR was found to not be predictive of CP recidivism with the CPO group. When assessing if there is something unique with these offenders that may make recidivism prediction near impossible with the LSI-OR, it seems unlikely, as it is able to predict with various other subgroups, such as other sexual offenders, women offenders, and Aboriginal offenders, and the central eight of the LSI-OR continue to be common risk factors for all offenders, regardless of the type of offender or subgroup. Could the LSI-OR be missing critical information among the CPOs with the absence of a sexual subscale or section? This also appears unlikely because even tools, such as the CPORT, that includes sexual items and was designed specifically for CPOs were not found to be predictive of any sexual recidivism with offenders only known to have CP offences. Also, based on the convergent validity of the tools, they are significantly, albeit moderately, related to each other. In sum, the LSI-OR should not be used to assess CPOs, SOs, or NSOs likelihood of reoffending with a CP offence.

4.6.3 Hypothesis 3.

It was hypothesized that the CPORT-M would have moderate predictive accuracy on sexual recidivism and weak predictive accuracy on CP recidivism for the CPOs. The CPORT-M variables were not significantly related to either CP or sexual recidivism, with the exception of any failure on conditional release which was significantly associated with sexual recidivism. Further, the results revealed that the CPORT-M variables were not predictive of either CP or sexual recidivism for the CPOs. Thus, the prediction was not supported. Similarly to these findings, Seto and Eke (2015) found that the CPORT was not predictive of sexual recidivism with offenders only known to have CP offences. The authors explained that this could be attributed to the low base rate of sexual recidivism in the group of offenders. However, the CPORT in their study did predict sexual recidivism among CPOs with other offending in their history. Interestingly, in this study, 64.5% of the current CPO sample had a prior criminal history and 6.1% of CPOs were found to have prior contact sexual offences, yet the CPORT-M was not predictive with these offenders. However, similar to Seto and Eke's findings, when examining only the custody CPOs, the CPORT-M was predictive of sexual recidivism.

4.7 ROC Analyses and Regression for LSI-OR and CPORT-M with Recidivism Variables

4.7.1 ROC Analyses.

It was found that the LSI-OR was only predictive of general recidivism for the CPO sample and predictive of sexual, violent, and general recidivism for the SO and NSO samples. Similarly, Wormith et al. (2012) found that the LSI-OR was predictive of sexual, violent, and general recidivism for sexual offenders, with the LSI-OR performing better for the sexual offenders in comparison to the non-sexual offenders; which also mirrored the findings for this study (with the exception of sexual recidivism which had lower predictive accuracy among the SOs compared to the NSOs).

Additionally, the CPORT-M was predictive of general recidivism. Likewise, Seto and Eke (2015) found the original CPORT to be predictive of general recidivism for their total sample. However, they found it was not predictive of sexual recidivism for the offenders with only CP offences, even though it did predict sexual recidivism with CPOs with other offending (but no contact sexual offending) in their history or with contact sexual offending histories. The database did not allow for an examination of past historical offences for the CPOs; thus, it was impossible to determine what offences existed in the CPOs prior history; however, as previously mentioned, it was known that 64.5% of the CPO sample had prior criminal histories and 6.1% had prior contact sexual offences. Overall, the modified version of the tool, with two fewer items, which was necessitated by lack of access to information required to score these items, did not perform as well as the original CPORT in predicting sexual recidivism for all of the CPOs. More research is needed to further cross-validate both tools; however, the results suggest that the CPORT may be more appropriate for CPOs.

4.7.2 Logistic Regression.

Regression analyses indicated that there were no significant predictor of violent recidivism. Only a few significant predictors emerged for CP (i.e., any failure on conditional release), sexual (i.e., any failure on conditional release and procriminal attitude/orientation), and general recidivism (i.e., antisocial patterns and personal problems with criminogenic potential).

4.8 Summary and Convergent Validity of LSI-OR and CPORT-M

The two risk assessment tools demonstrated some degree of convergent validity in that the CPORT-M total score was significantly correlated with the general risk/needs total score, the

initial risk level, and the final risk level after the override. Further, most of the individual items of the CPORT-M were also significantly related to the individual subscales of the LSI-OR, with the exception of the substance abuse subscale. Overall, the LSI-OR and CPORT-M were only correlated with and predictive of general recidivism for the CPO sample.

4.9 Limitations

There were a number of limitations to the current study. The data were extracted by the MCSCS, therefore, the integrity of the data depended on the individuals that entered information into the database. Furthermore, the database captured only index offences and not offenders' previous offences, resulting in the likelihood that some of the NSOs had previous sexual offences and perhaps even CP offences in their criminal history. Similarly, due to the available information provided in the database, the SO group was created using the index offence severity levels, specifically, non-violent and violent sexual offences which are captured by their MSO on file. However, the MSO does not identify sexual offenders who had both sexual and non-sexual index offences when the non-sexual offence is more serious than the sexual offence. Therefore, some NSOs may have also had an index sexual offence or even a CP index offence.

Some other identified limitations pertained to the recidivism outcomes. That is, only an offender's first recidivistic event was captured in the database. It would have been informative to examine all CP and sexual recidivistic events for all of the offenders which may have led to a higher base rate of CP and sexual recidivism during the follow-up period. As well, some recidivism outcomes may have been missed if they had occurred in another province. Information on recidivism collected from the CPIC would have been more comprehensive by capturing recidivism across the country, although it is often out of date such that recent recidivism may not yet have been entered on the data system.

It is noted that this study did not have fixed follow up periods for the offenders. Consequently, survival analyses with Cox regression were conducted to address the variable follow-up period among participants. As well, due to the low base rates of CP and sexual recidivism and the large sample size of the NSOs, the correlations that were obtained must be interpreted with caution. The AUCs, which were obtained with the ROC analyses, are less affected by the base rates and are more appropriate, affording a fair comparison among the recidivism variables with varying base rates.

Two limitations associated with the predictor variables are also noteworthy. The LSI-OR assessments were taken from the Ministry database and had been conducted by probation officers and institutional staff throughout the organization. The study was dependent on the assessors for conducting accurate assessments, therefore, an interrater reliability was not conducted or available. On the other hand, the CPORT-M was scored by the researcher. However, insufficient information was available on two of the original seven items of the CPORT-M, resulting in an abbreviated version of the scale. However, in previous research, these two items did not appear to have significant predictive capability.

Lastly, it is important to note that the CPORT-M and CPORT risk assessment tools only examine static risk factors. Therefore, these tools could not be used to assess changes in offenders over time, such as after a treatment program. Thus, it should only be used to initially assess risk of recidivism, whereas a dynamic risk assessment tool would need to be adopted to assess any further changes in an offender over time.

4.10 Future Directions

A possible direction for future research may include more research to cross-validate the CPORT with the CPOs, as the current findings did not find that the CPORT-M predicted sexual recidivism with CPOs which was different compared to Seto and Eke's (2015) findings. Similarly, the CPORT proved superior to the CPORT-M (even though the omitted items were found to not be very predictive previously, Seto & Eke, 2015); thus, further research is needed to support these findings. In addition, more research is needed on the LSI-OR with this sample of offenders, as the LSI-OR is known to be predictive of various types of recidivism among various subgroups of offenders, including sexual offenders. As well, a replication of this study factoring in an examination of all offenders' past CP and sexual offences and CP and sexual recidivistic events could significantly increase the CPOs and SOs sample sizes and possibly result in higher base rates of CP and sexual recidivism which may clarify some of the results in the present study.

4.11 Conclusion

The findings in the study added to the literature on CPOs (e.g., higher CP and sexual recidivism rates compared to the SOs and NSOs) and confirmed specific risk factors (e.g., ethnicity, prior criminal histories). As CPO risk assessment is of great importance and is greatly

needed for this offender population, the findings demonstrated that the LSI-OR was predictive of general recidivism for the CPO sample and predictive of sexual, violent, and general recidivism for the SO and NSO samples. However, the results proved that the LSI-OR was more effective in predicting violent and general recidivism with SOs (which is contrary to what was expected, as it was originally designed for use with the general offender population). Ultimately, the low base rates of CP recidivism may have resulted in low statistical power to detect an association, suggesting that it could be very difficult to validate a risk assessment tool for this specific population. Further, the CPORT-M was predictive of general recidivism, validating the use of this tool with CPOs for general recidivism, but it did not perform as well as the original CPORT.

A few recommendations for users of both of these risk assessment tools have been identified. The LSI-OR and CPORT-M should only be used to assess risk of general recidivism for CPOs. However, since the CPORT-M was found to have a slightly higher predictive accuracy than the LSI-OR in assessing risk of general recidivism with CPOs, it would be beneficial for the MCSCS to conduct CPORT-M assessments on CPOs who are under their supervision, either replacing the LSI-OR, or in addition to it. However, the LSI-OR proved to be predictive of sexual, violent, and general recidivism for both SOs and NSOs. Thus, it is appropriate to continue to use this tool for these subgroups of offenders. The use of the override was also used substantially more with both CPOs and SOs; thus, it is recommended that practitioners need to be aware of this, as it is detrimental to the LSI-OR's predictive capacity.

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Appendix A: Contact Offences Included for CPORT Data

Offence Code	Criminal Code Offence Description
ACRP	ATT COMMIT RAPE PRED 145
ASA	AGG. SEXUAL ASSAULT - 273(1)
ASAF	AGG. SEXUAL ASSLT WITH FIREARM 273(2)(a)
HSA	SEXUAL ASSAULT S246.1
IAFP	INDECENT ASLT FEMALE PRED 141
IFEP	INDECENT ASSLT FEMALE PRED 149
IMAP	INDECENT ASLT MALE PRED 148
PISA	PARTAKE IN SEX. ASSAULT - 272(D)
RAPP	RAPE PRED 136
SA	SEXUAL ASSAULT,D - 271
SAA	SEXUAL ASSLT-AGGRAVATED,I- 273
SABH	SEX. ASSAULT BODY HARM - 272(C)
SACB	SEXUAL ASSLT. CAUSING BOD- 272
SAI	SEX. ASSAULT, INDICT. - 271(1)(A)
SAP	SEXUAL ASSLT.PARTY TO,D - 272.D
SAS	SEX. ASSAULT, SUMMARY - 271(1)(B)
SATH	SEXUAL ASSAULT-THREAT HAR- 272.B
SAW	SEXUAL ASSAULT W/WEAPON - 272.A
SFBP	SEX W/FEM 14-16 PRED 138(2)
SFUP	SEX W/FEM-14 PRED 138(1)
SIFP	SEX INTER W/FEM<14 PRED 146(1)
SSDP	SEX WITH ST/DAUGHTER PRED 145
CST	CSL TO SEX TOUCHING UNDER 152
ITST	INVITATION TO SEXUAL TOUC- 152
PPSA	PARENT PROCURE SEX ACT - 170
SEEX	SEXUAL EXPLOITATION - 153 (1A)
SEIT	SEX EXPLOIT, INVITE TOUCH- 153(1)(B)
SEXI	SEXUAL INTERFERENCE - 151
SEXT	SEX EXPLOIT, TOUCHING - 153(1)(A)
SI	SEX INTERCOURSE-NOT INCES- 273

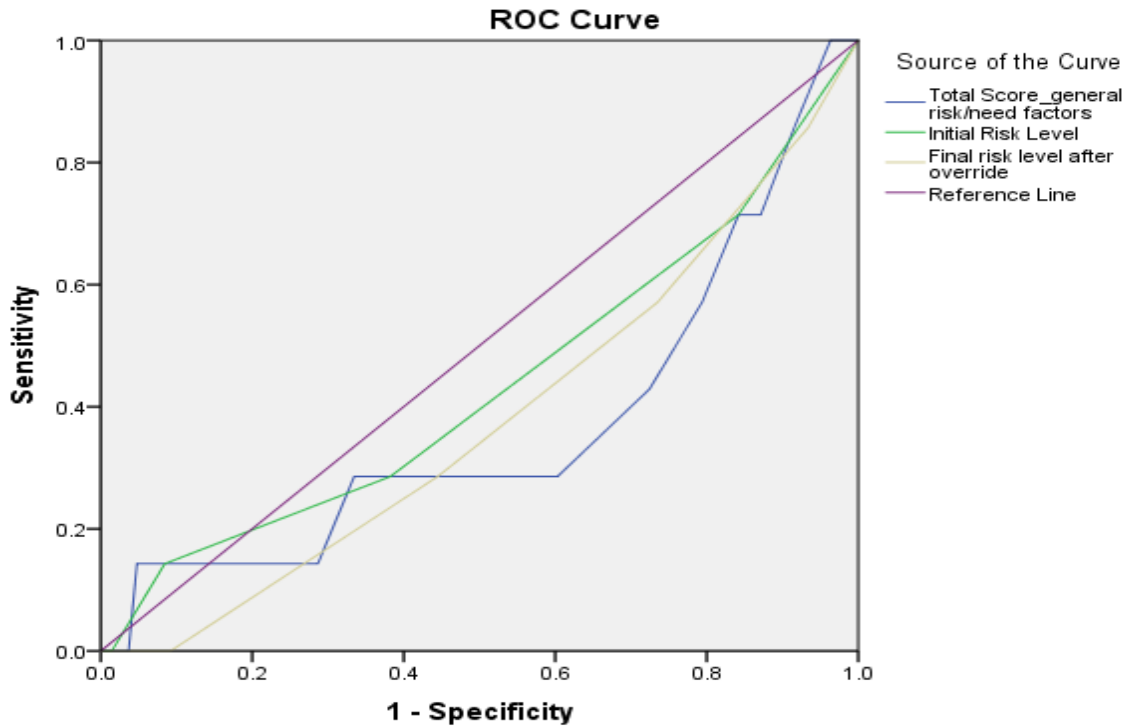
Appendix B: ROC Graphs for LSI-OR Total Score, LSI-OR Risk Levels, and CPORT-M Total Score with Recidivism Variables for the Offender Groups

ROC Graphs for LSI-OR Total Score and Risk Levels

CP Recidivism.

Figure 6.

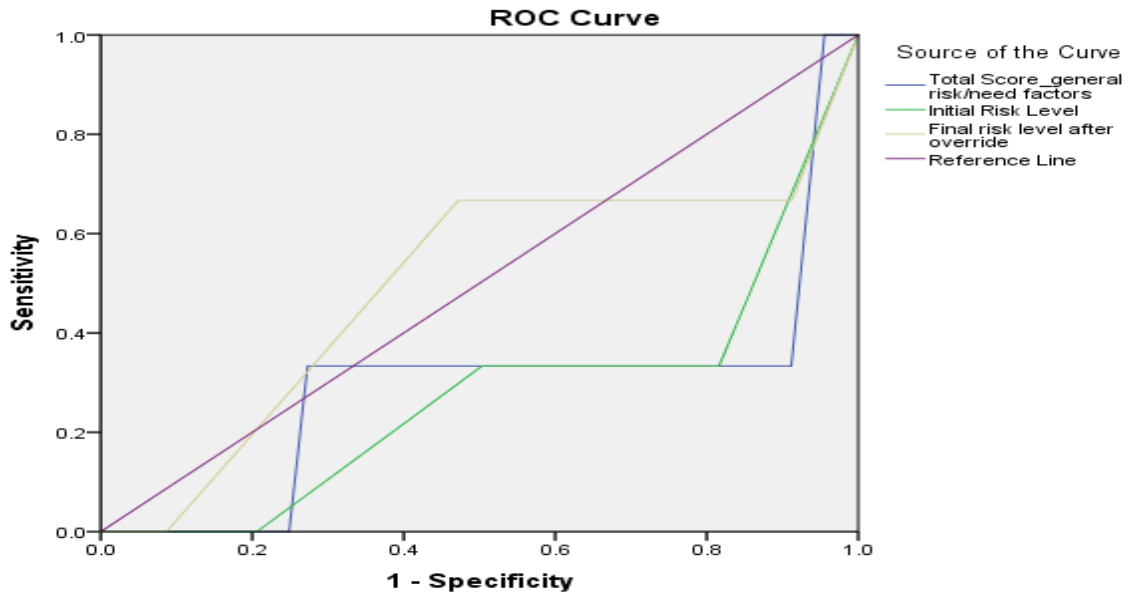
ROC curve on CP recidivism for the CPOs.



Diagonal segments are produced by ties.

Note: ROC = Receiver Operator Characteristic. CP = Child Pornography. CPO = Child Pornography Offender.

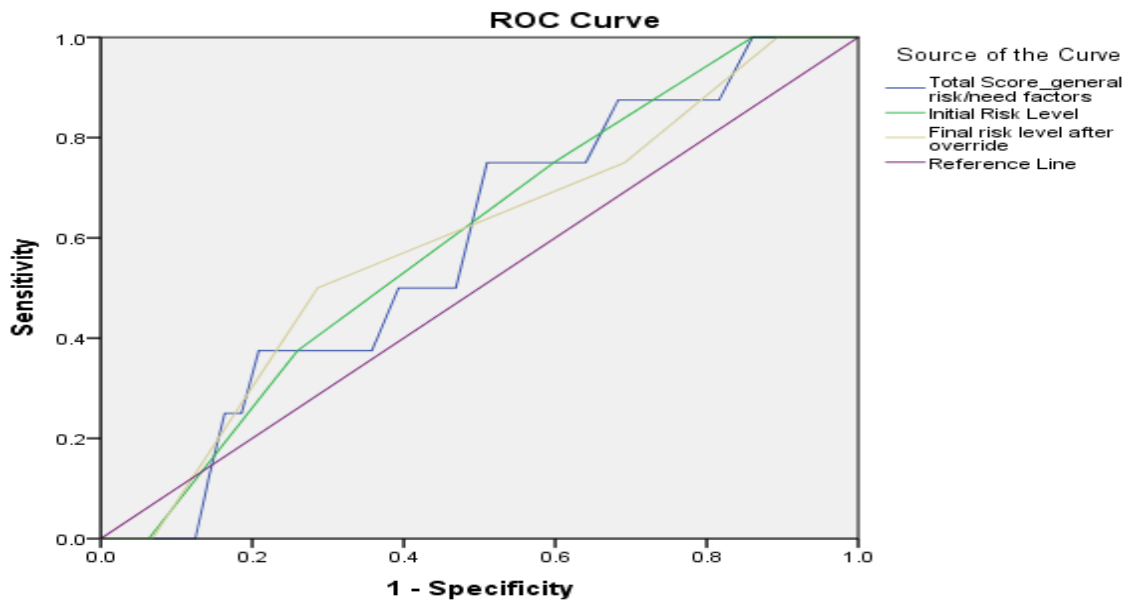
Figure 7.
 ROC curve on CP recidivism for the SOs.



Diagonal segments are produced by ties.

Note: ROC = Receiver Operator Characteristic. CP = Child Pornography. SO = Sexual Offender.

Figure 8.
 ROC curve on CP recidivism for the NSOs.



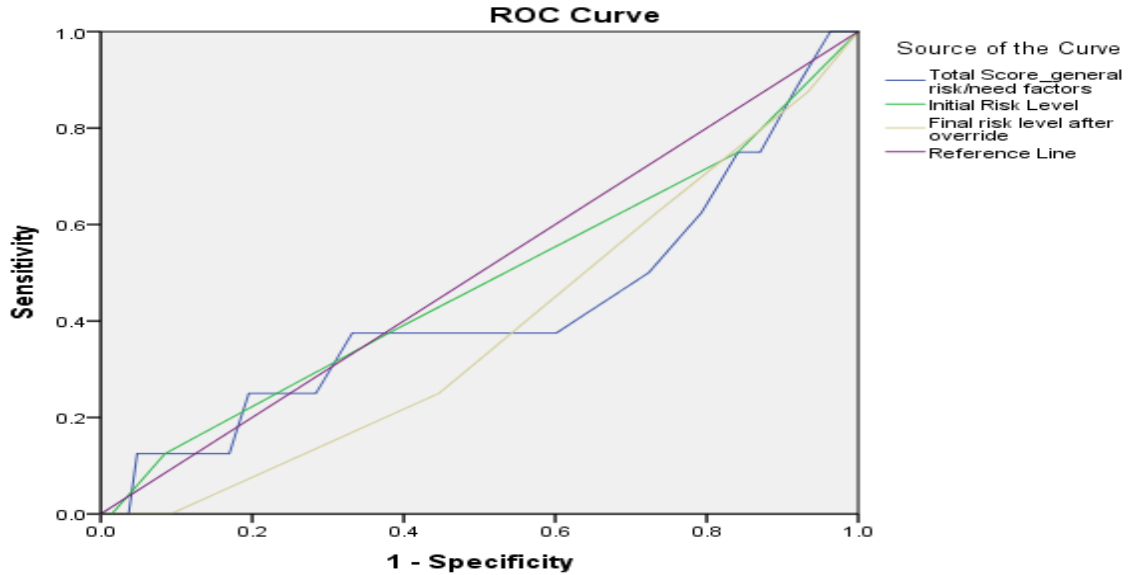
Diagonal segments are produced by ties.

Note: ROC = Receiver Operator Characteristic. CP = Child Pornography. NSO = Non-sexual Offender.

Sexual Recidivism.

Figure 9.

ROC curve on sexual recidivism for the CPOs.

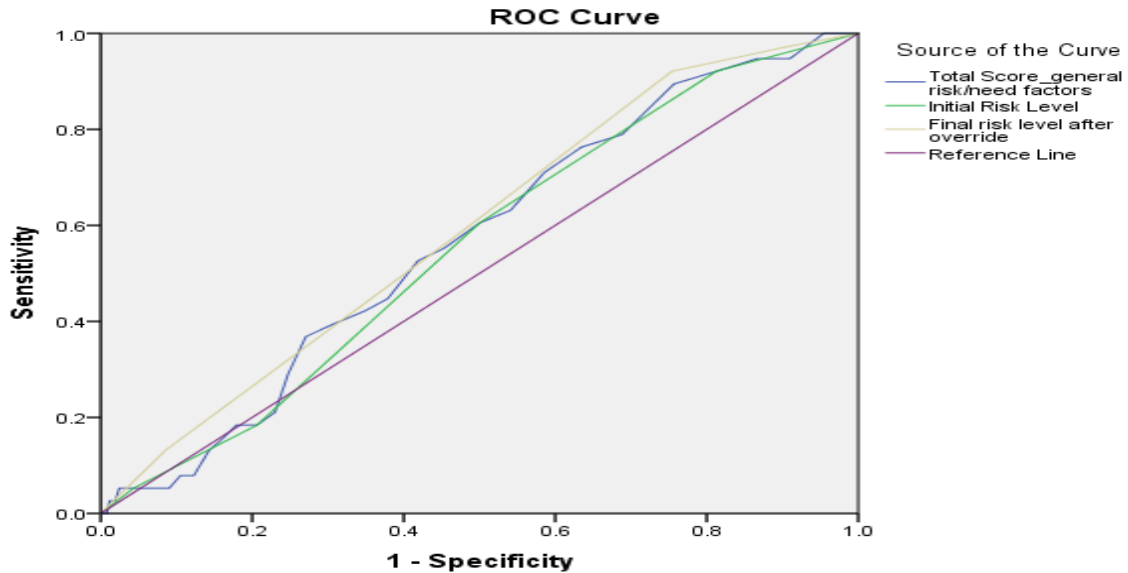


Diagonal segments are produced by ties.

Note: ROC = Receiver Operator Characteristic. CPO = Child Pornography Offender.

Figure 10.

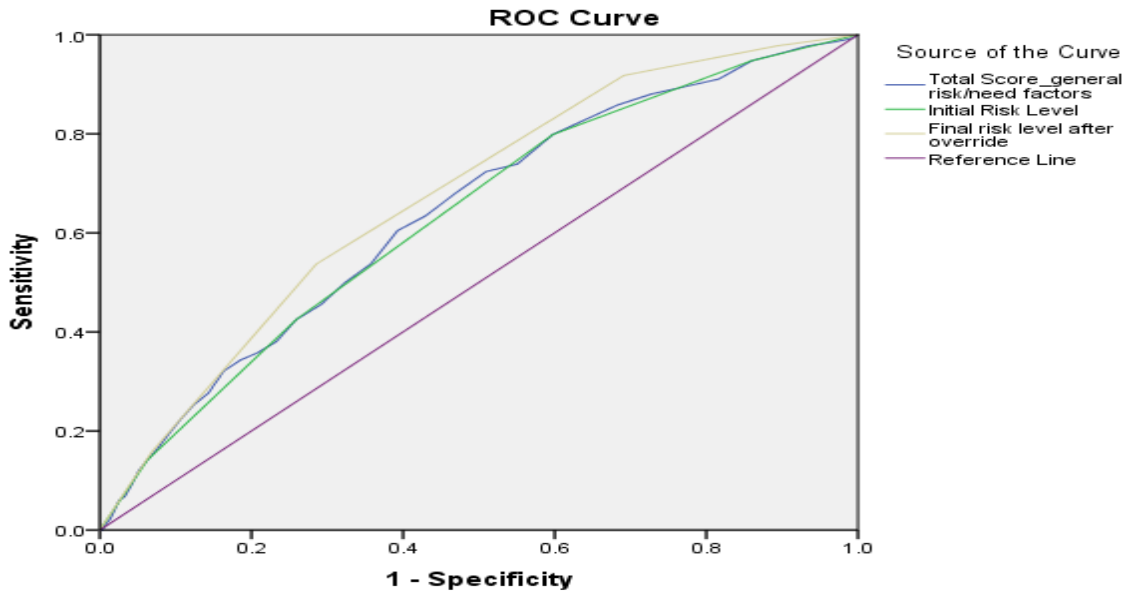
ROC curve on sexual recidivism for the SOs.



Diagonal segments are produced by ties.

Note: ROC = Receiver Operator Characteristic. SO = Sexual Offender.

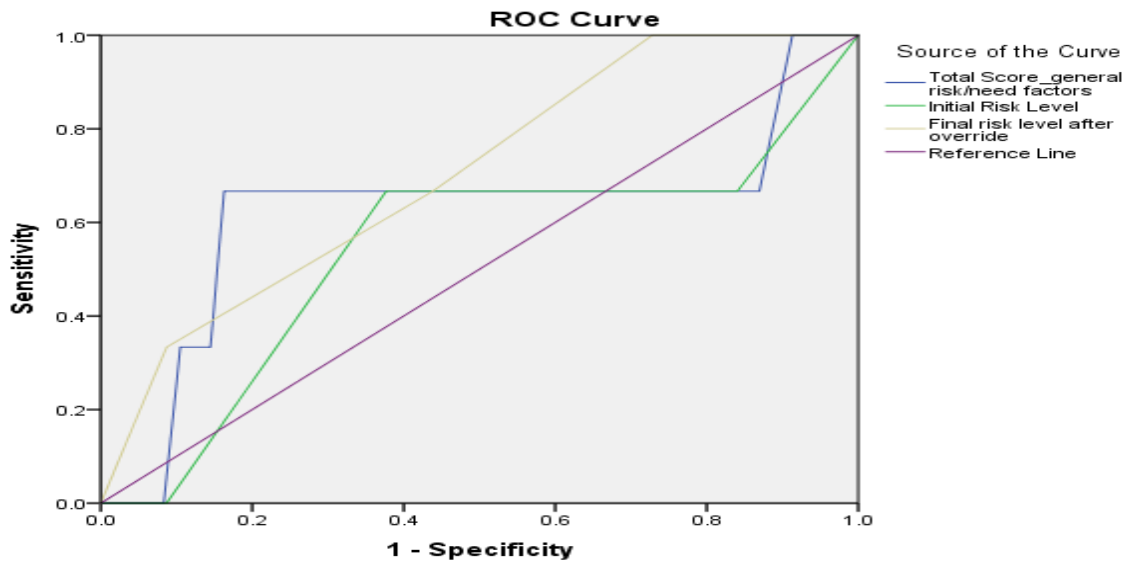
Figure 11.
ROC curve on sexual recidivism for the NSOs.



Note: ROC = Receiver Operator Characteristic. NSO = Non-sexual Offender.

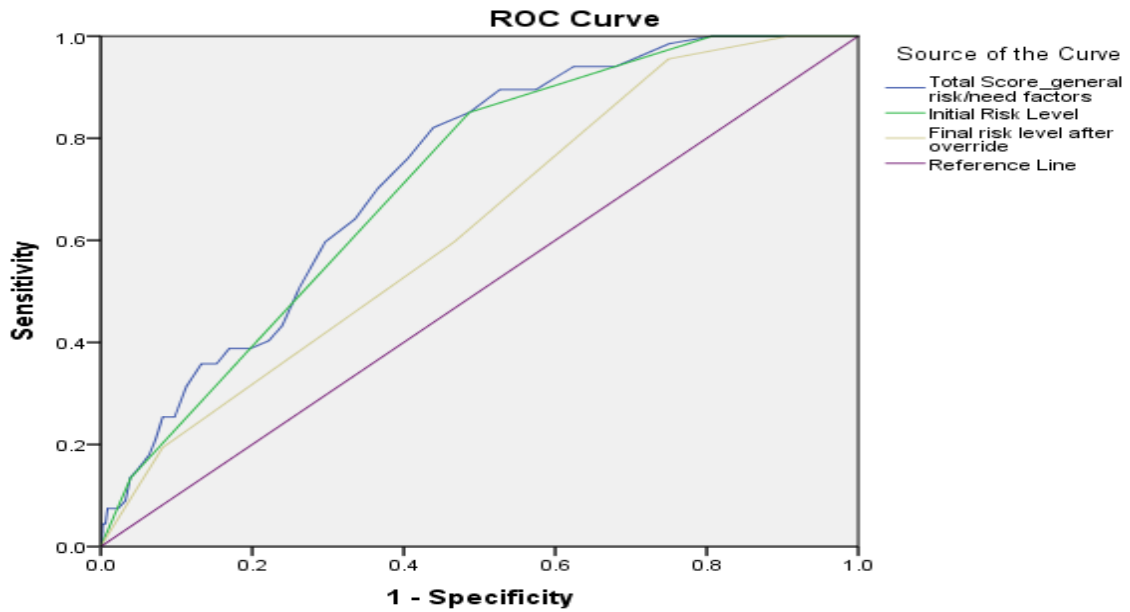
Violent Recidivism.

Figure 12.
ROC curve on violent recidivism for the CPOs.



Note: ROC = Receiver Operator Characteristic. CPO = Child Pornography Offender.

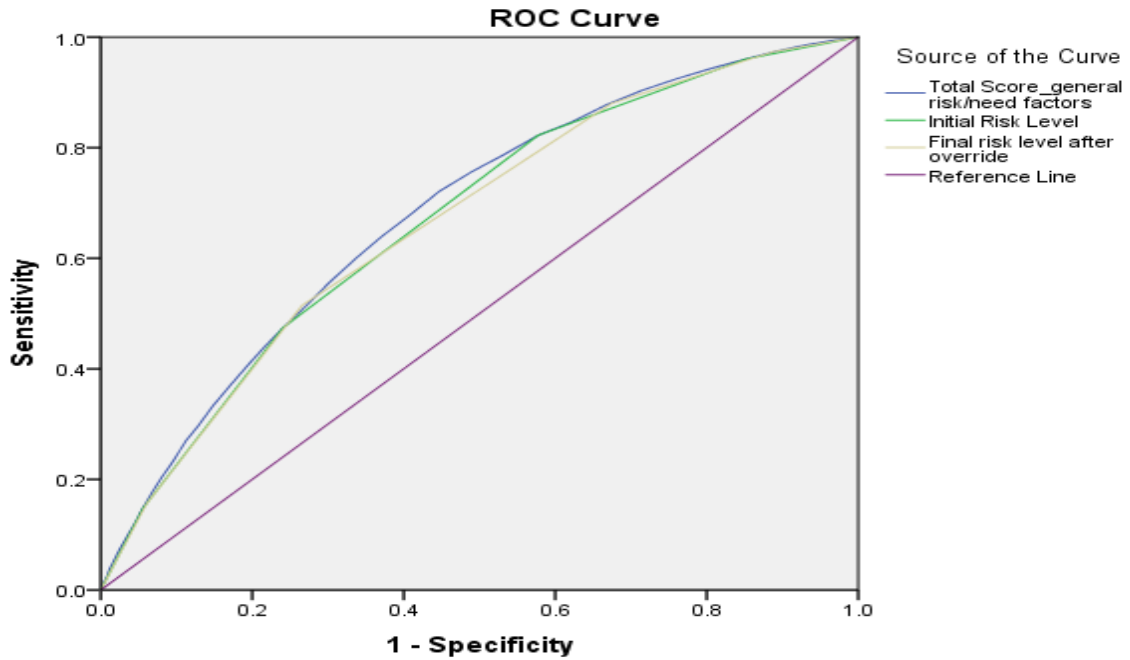
Figure 13.
ROC curve on violent recidivism for the SOs.



Diagonal segments are produced by ties.

Note: ROC = Receiver Operator Characteristic. SO = Sexual Offender.

Figure 14.
ROC curve on violent recidivism for the NSOs.

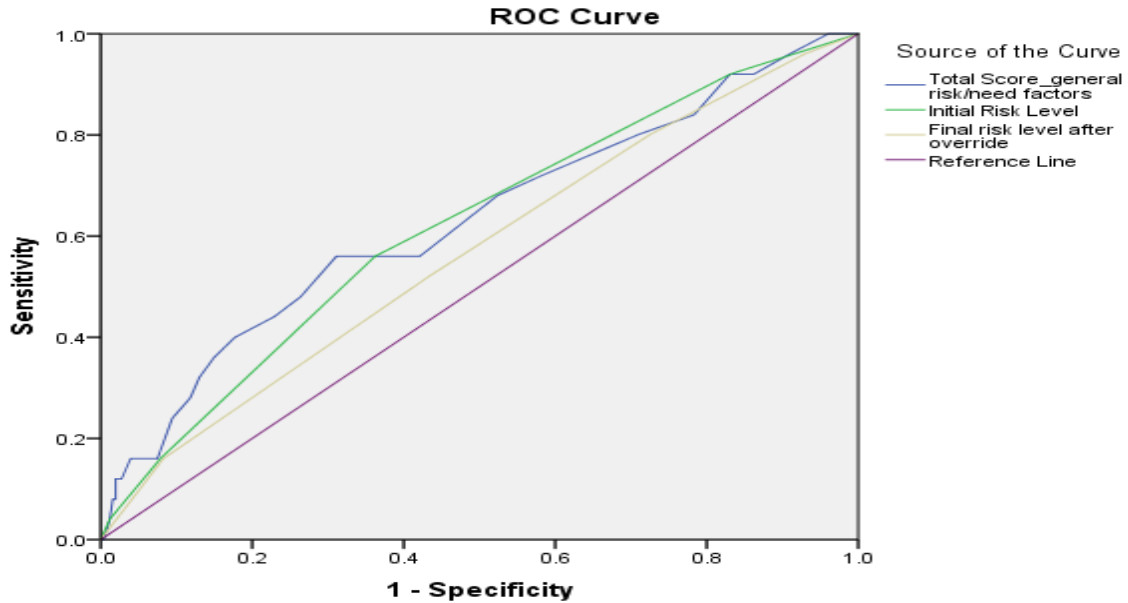


Diagonal segments are produced by ties.

Note: ROC = Receiver Operator Characteristic. NSO = Non-sexual Offender.

General Recidivism.

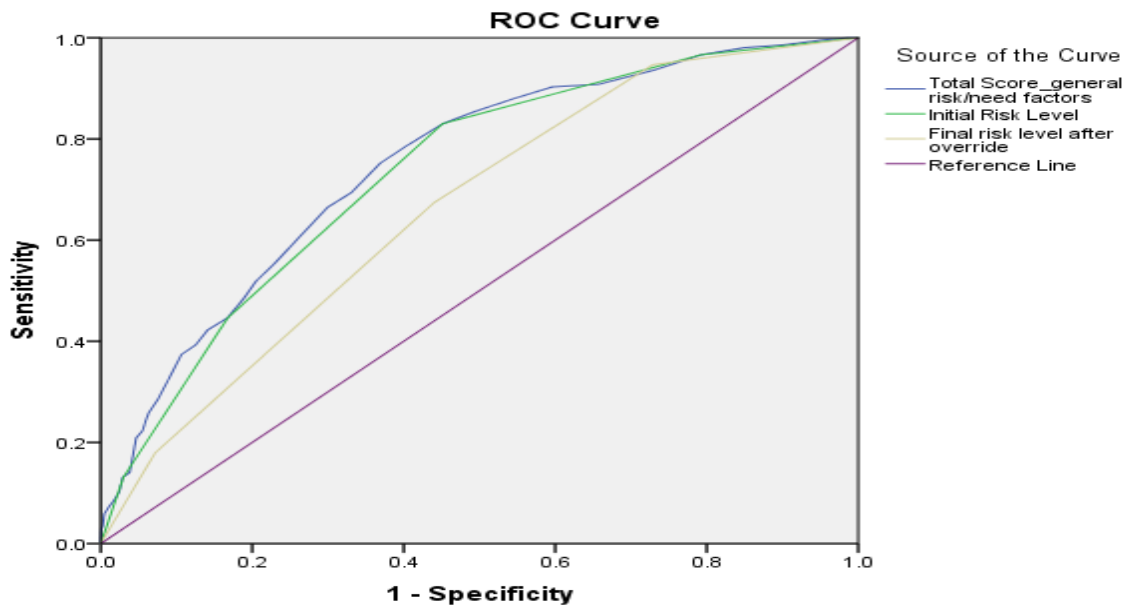
Figure 15.
ROC curve on general recidivism for the CPOs.



Diagonal segments are produced by ties.

Note: ROC = Receiver Operator Characteristic. CPO = Child Pornography Offender.

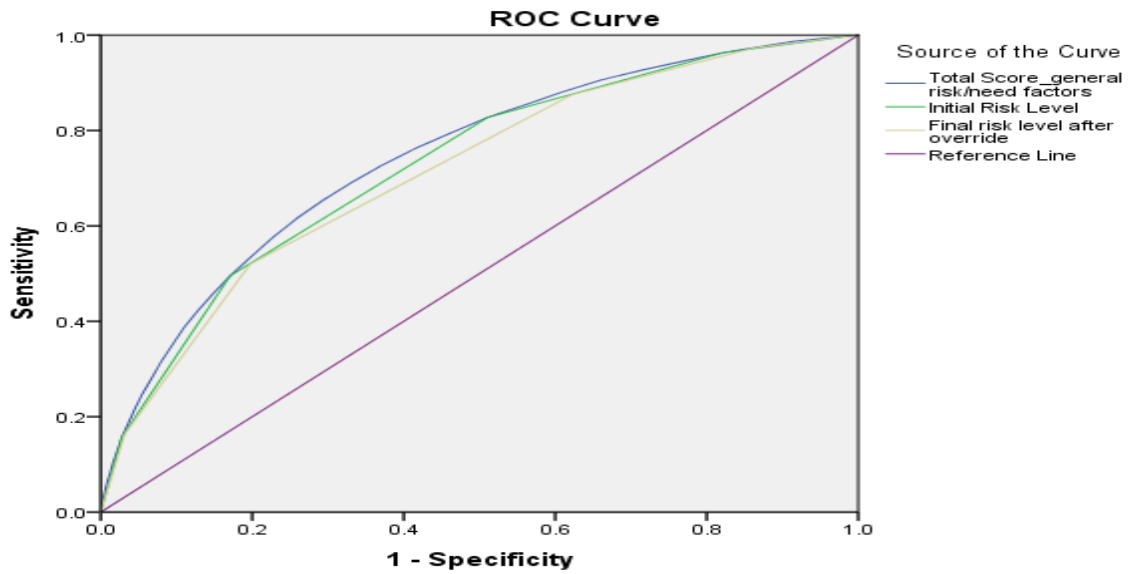
Figure 16.
ROC curve on general recidivism for the SOs.



Diagonal segments are produced by ties.

Note: ROC = Receiver Operator Characteristic. SO = Sexual Offender.

Figure 17.
ROC curve on general recidivism for the NSOs.

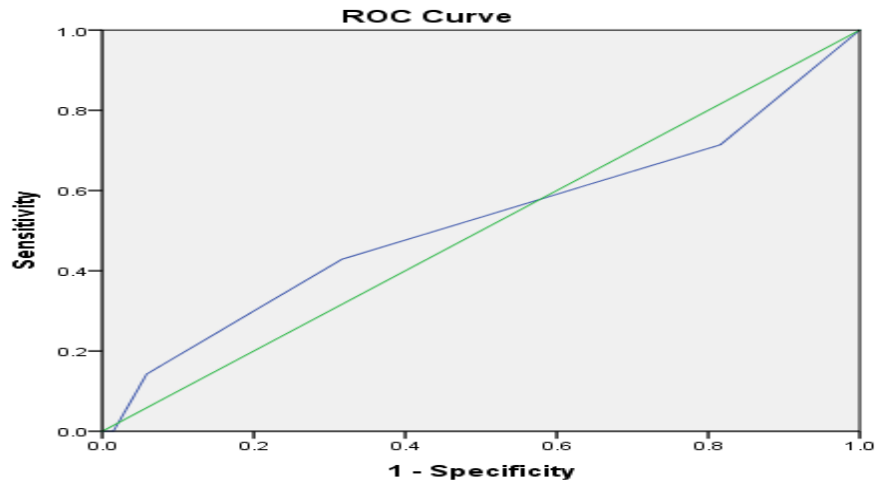


Diagonal segments are produced by ties.

Note: ROC = Receiver Operator Characteristic. NSO = Non-sexual Offender.

ROC Graphs for CPORT-M Total Score

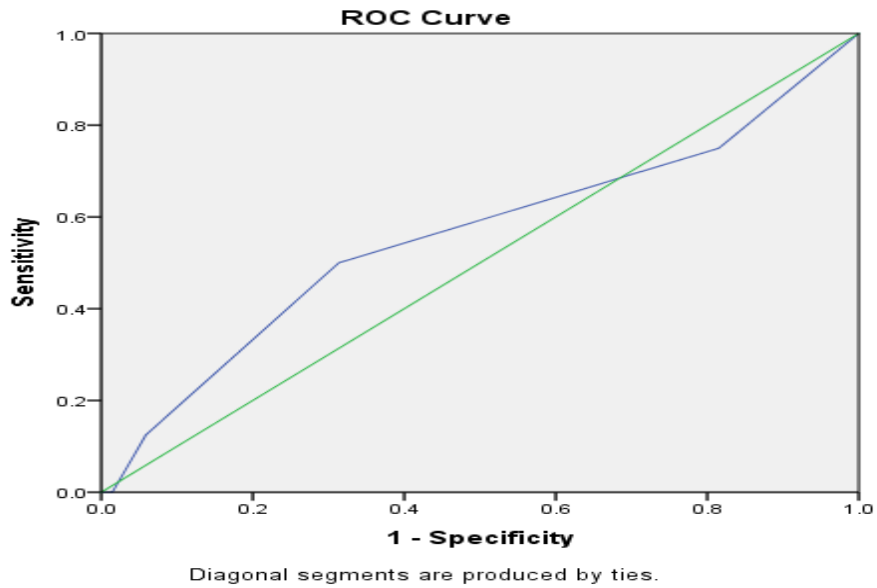
Figure 19.
ROC curve for CPORT-M on CP recidivism for the CPOs.



Diagonal segments are produced by ties.

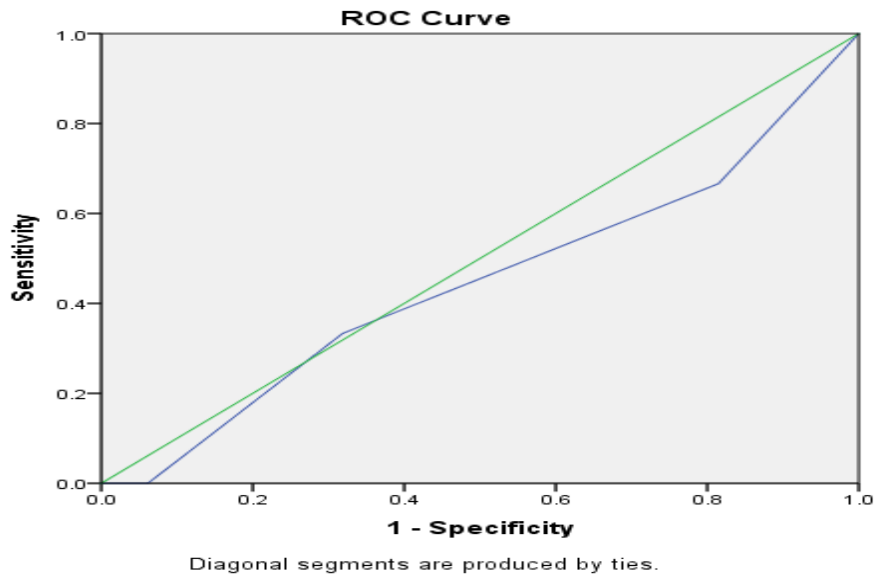
Note: ROC = Receiver Operator Characteristic. CPORT-M = Child Pornography Offender Risk Tool – Modified. CP = Child Pornography. CPO = Child Pornography Offender.

Figure 20.
ROC curve for CPORT-M on sexual recidivism for the CPOs.



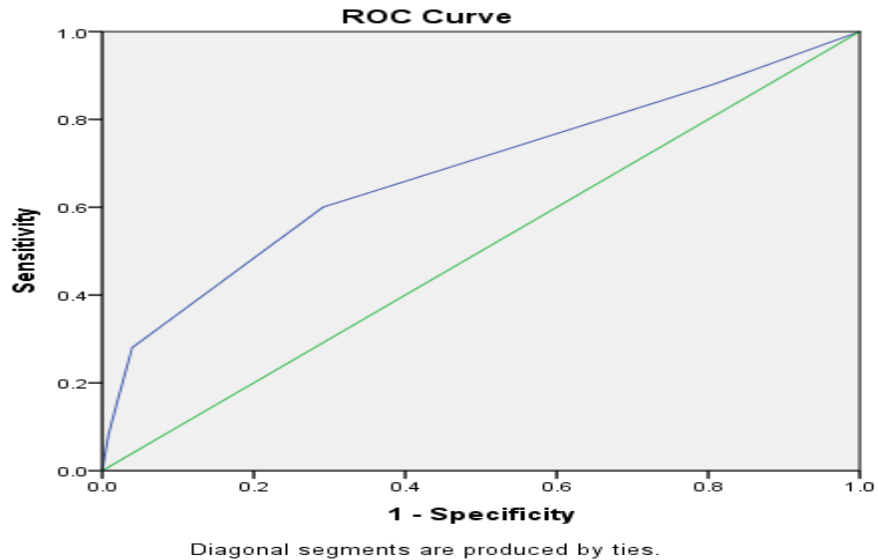
Note: ROC = Receiver Operator Characteristic. CPORT-M = Child Pornography Offender Risk Tool – Modified. CPO = Child Pornography Offender.

Figure 21.
ROC curve for CPORT-M on violent recidivism for the CPOs.



Note: ROC = Receiver Operator Characteristic. CPORT-M = Child Pornography Offender Risk Tool – Modified. CPO = Child Pornography Offender.

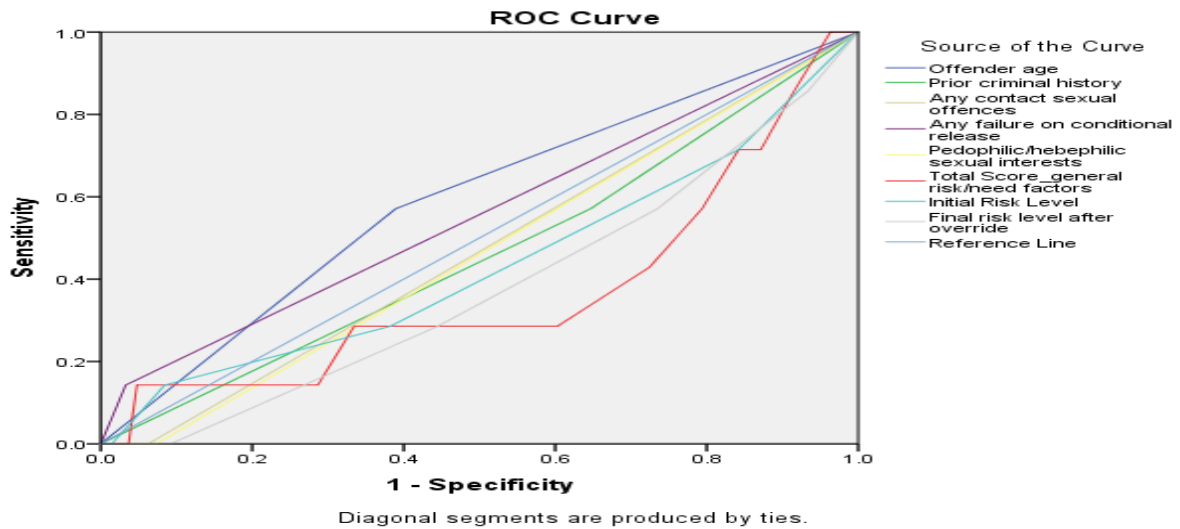
Figure 22.
 ROC curve for CPORT-M on general recidivism for the CPOs.



Note: ROC = Receiver Operator Characteristic. CPORT-M = Child Pornography Offender Risk Tool – Modified. CPO = Child Pornography Offender.

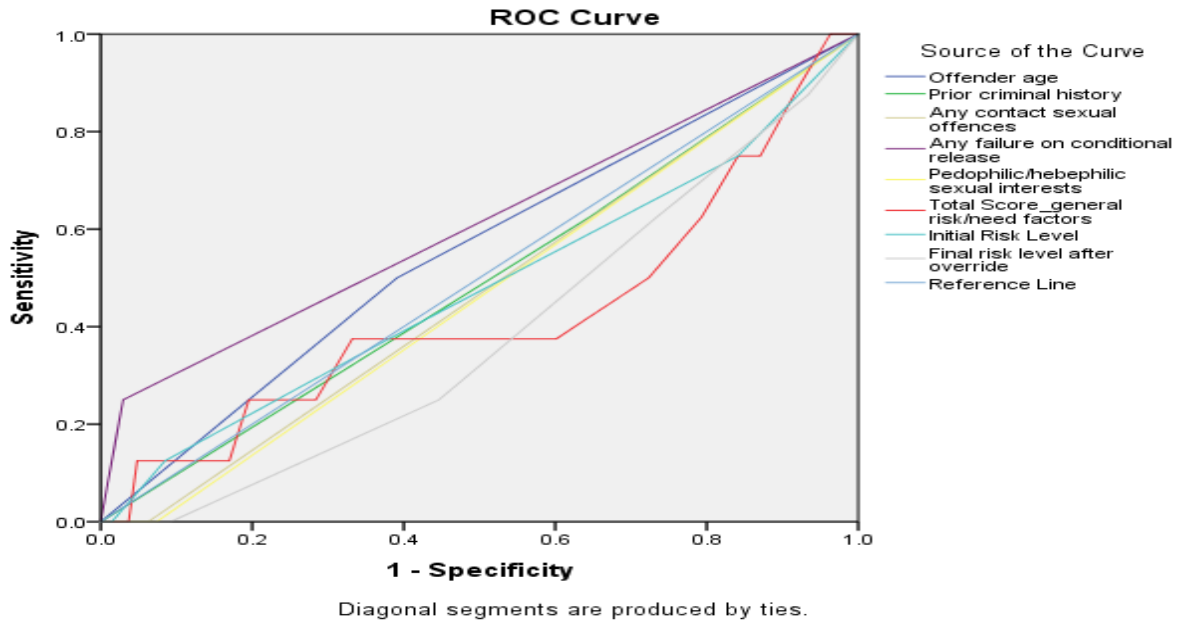
ROC Graphs for CPORT-M and LSI-OR Items with CP Recidivism

Figure 23.
 ROC curve for CPORT-M and LSI-OR items on CP recidivism for the CPOs



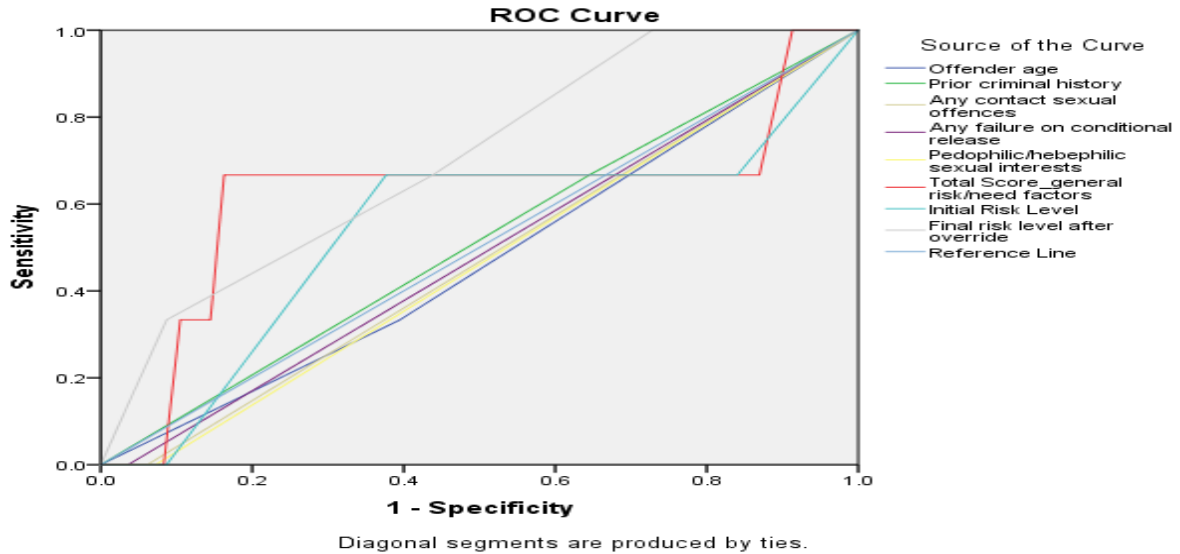
Note: ROC = Receiver Operator Characteristic. CPORT-M = Child Pornography Offender Risk Tool – Modified. LSI-OR = Level of Service Inventory – Ontario Revision. CP = Child Pornography. CPO = Child Pornography Offender.

Figure 24.
 ROC curve for CPORT-M and LSI-OR items on sexual recidivism for the CPOs



Note: ROC = Receiver Operator Characteristic. CPORT-M = Child Pornography Offender Risk Tool – Modified. LSI-OR = Level of Service Inventory – Ontario Revision. CPO = Child Pornography Offender.

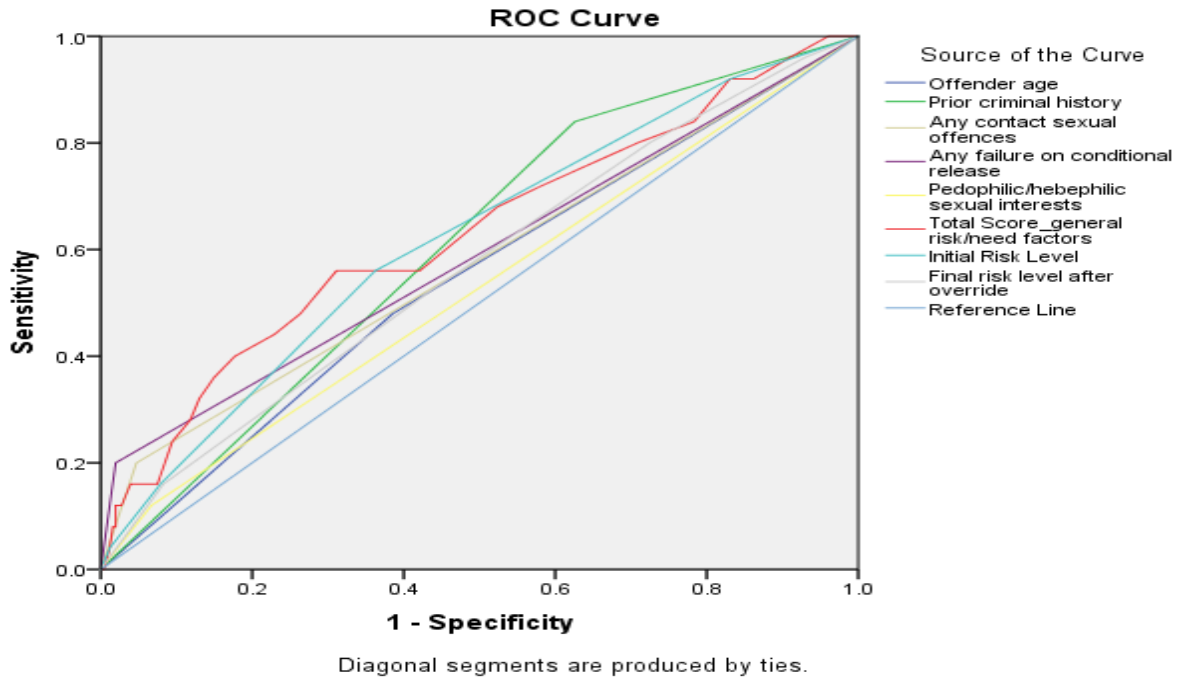
Figure 25.
 ROC curve for CPORT-M and LSI-OR items on violent recidivism for the CPOs



Note: ROC = Receiver Operator Characteristic. CPORT-M = Child Pornography Offender Risk Tool – Modified. LSI-OR = Level of Service Inventory – Ontario Revision. CPO = Child Pornography Offender.

Figure 26.

ROC curve for CPORT-M and LSI-OR items on general recidivism for the CPOs



Note: ROC = Receiver Operator Characteristic. CPORT-M = Child Pornography Offender Risk Tool – Modified. LSI-OR = Level of Service Inventory – Ontario Revision. CPO = Child Pornography Offender.

Appendix C: Recoded Index Offence Severity Levels and Types

Offence Severity Level	Offence Type
1	Unknown
2	Municipal Bylaw Offences
3	Other Provincial Offences
4	Liquor Licence Act Offences
5	Highway Traffic Act Offences
6	Parole Violations
7	Other Federal Statute Offences
8	Misc. Offences against Public Order
9	Drinking & Driving Offences
10	Breach of Court Order/Escape
11	Criminal Code Traffic Offences
12	Drug Possession Offences
13	Obstruction of Justice Offences
14	Morals & Gaming Offences
15	Arson/Property Damage Offences
16	Assault & Related Offences
17	Theft/Possession Offences
18	Misc. Offences against the Person
19	Fraud & Related Offences
20	Weapons Offences
21	Traffic/Import Drug Offences
22	Non-Violent Sexual Offences
23	Break & Enter & Related Offences
24	Violent Sexual Offences
25	Serious Violent Offences
26	Homicide & Related Offences

Appendix D: Analyses for Custody Offenders

Child Pornography Offenders (CPOs)

There was total of 157 custody CPOs and they were convicted of the following index charges: 17 for ACP, four for CPF, nine for CPP, 127 for CPPO, and 41 for CPS. The number of CP charges for which the custody CPOs were convicted was as follows: 110 (70.1%) offenders had one charge; 42 (26.8%) had two charges; three (1.9%) had three charges; and two (1.3%) had four charges.

CPO, SO, and NSO Custody Groups on Demographic Characteristics, Sexual Offender Variable, and LSI-OR Variables

Descriptive and demographic characteristics were calculated for CPO, SO, and NSO custody samples (see Table 34). There were a total of 157 custody CPOs, 517 custody SOs, and 7,421 custody NSOs. The three custody offender groups significantly differed in age. Tukey post hoc analysis indicated that the NSO custody sample was significantly younger than both the CPO and SO custody samples ($p < .001$). A large majority of offenders in the three custody groups were Caucasian. There was also a large representation of Aboriginal offenders in all three custody samples: 12% of the SOs, 11.5% of the NSOs, and 2.5% of the CPOs were Aboriginal. As well, a large portion of the CPO custody sample was Southeast Asian (1.3%). Ethnicity was unknown for many offenders in all three custody samples.

The release dates for the offenders ranged from January 8, 2010 to December 31, 2011 for the CPO custody sample, from January 1, 2010 to December 29, 2011 for the SO custody sample, and from January 1, 2010 to December 31, 2011 for the NSO custody sample. The offence severity level, total days served, and the sentence length significantly differed among all three custody samples. Post hoc analyses were conducted and found that all custody offender groups had significantly different offence severity levels ($p = .026$). The NSO custody sample had lower index offence severity levels compared to both the CPO and SO custody samples; although, custody SOs had higher index offence severity levels compared to the custody CPOs. Further, the only significant differences of the means for total days served was between the custody NSOs and both the CPO ($p < .001$) and SO custody samples ($p < .001$). The NSO custody sample served significantly less days incarcerated compared to both the CPO and SO custody samples, 157 compared to 224 and 243 days, respectively. The total days served for the

custody sample ranged from: 15 to 1,045 days for the CPOs; 11 to 1,093 days for the SOs; and from zero to 3,377 days for the NSOs. As well, the only significant differences for the sentence length was found between the NSO custody sample (213 days) and both the CPO (305 days; $p < .001$) and the SO custody samples (326 days; $p < .001$).

Compared to the NSO custody sample, the CPO and SO custody samples were significantly more likely to have been flagged for having a current or previous sexual offence. A total of 96.8% of the CPO custody sample and 94.6% of the SO custody sample were flagged for a current or previous sexual offence. Interestingly, for 5 (3.2%) of the custody CPOs and 28 (5.4%) of the custody SOs this variable was flagged as not present. As well, 6.8% of the custody NSOs were flagged for having a current or previous sexual offence.

Table 34.

Comparisons of CPO, SO, and NSO custody samples on demographic characteristics

Demographic Characteristics	CPO Custody (n=157) Mean (SD) or n (%)	SO Custody (n=517) Mean (SD) or n (%)	NSO Custody (n=7421) Mean (SD) or n (%)	ANOVA or Chi Square
Age:	41.82 ^a (12.94)	40.54 ^a (13.83)	33.94 ^b (11.31)	$F(2, 8092) = 111.47, p < .001$
Race:				$\chi^2(20) = 88.66, = p < .001$
Aboriginal	4 (2.5%)	62 (12%)	850 (11.5%)	
Black	1 (0.6%)	24 (4.6%)	773 (10.4%)	
Caucasian	135 (86%)	335 (66.6%)	4853 (65.4%)	
Declined to Specify	--	2 (0.4%)	17 (0.2%)	
East Asian	1 (0.6%)	4 (0.8%)	84 (1.1%)	
Hispanic	1 (0.6%)	10 (1.9%)	72 (1.0%)	
Other Minority	--	9 (1.7%)	171 (2.3%)	
South Asian	--	10 (1.9%)	104 (1.4%)	
Southeast Asian	2 (1.3%)	3 (0.6%)	96 (1.3%)	
Unknown	13 (8.3%)	42 (8.1%)	321 (4.3%)	
West Asian/Arabic	--	4 (0.8%)	80 (1.1%)	
Most Serious Offence (MSO) Severity Level	22 ^a (.42)	23 ^b (.98)	18 ^c (5.06)	$F(2, 8092) = 358.94, p < .001$

Total Days Served	223.98 ^a (149.76)	243.07 ^a (168.87)	156.52 ^b (150.16)	$F(2, 8092) = 91.80, p < .001$
Sentence Length	305.25 ^a (172.59)	326.39 ^a (194.12)	212.80 ^b (158.59)	$F(2, 8092) = 141.15, p < .001$
Current/previous Sexual Offence(s)	152 (96.8%)	488 (94.6%)	478 (6.8%)	$\chi^2(2) = 3866.53, p < .001$

Note: CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender. ^{a,b,c} = Different lettered superscripts indicated that the Tukey post hoc test differences of the means were significant at $p < .05$; whereas, same lettered superscripts indicated that the differences of the means were not significant.

The three custody offender samples significantly differed on most of the LSI-OR summary measures, with the exception of the strength scores for: education/employment, family/marital, leisure/recreation, procriminal attitude/orientation, and antisocial patterns. Tukey post hoc analyses were conducted on the significant variables and the results are presented for each measure below. Refer to Table 35 and Figure 27 for the means and standard deviations for all offender groups on the LSI-OR measures.

The general risk/needs mean score was significantly different for all custody offender groups; the custody CPOs mean score was significantly lower compared to both the SO ($p < .001$) and NSO custody samples ($p < .001$). However, the strength score for the general risk/needs scale was only significantly different between the SO and NSO custody samples ($p = .004$). The initial risk levels and the risk override scores were significantly different between the three custody offender groups ($p < .001$). Likewise, the final risk levels were significantly different between the three custody offender groups ($p = .014$) and the same was found for the criminal history subscale ($p < .001$). For the strength score of criminal history, the only significant differences of the means were found between the SO and NSO custody samples ($p = .031$). As well, the only significant differences of the means for the education/employment subscale was between the NSO custody sample and both the CPO ($p < .001$) and SO custody samples ($p < .001$). For the family/marital subscale, the significant differences were found between the CPO custody sample and both the SO ($p = .048$) and NSO ($p = .017$) custody samples. The significant differences found for the leisure/recreation subscale was between the SO and NSO custody samples ($p < .001$).

The companions and substance abuse subscales were significantly different for all three custody offender groups ($p < .001$). Furthermore, the only significant differences for the strength of the companions subscale was between the NSO and SO custody samples ($p = .003$). For the procriminal attitude/orientation subscale, the significant differences were found only among the CPO custody sample and both the SO ($p = .009$) and NSO ($p < .001$) custody samples. Also, the significant differences that were found for the strength score of the substance abuse subscale was between the NSO custody sample and both the CPO ($p < .001$) and SO custody samples ($p < .001$). Lastly, for the antisocial pattern subscale, the significant differences were found among the NSO custody sample and both the CPO ($p < .001$) and SO custody samples ($p < .001$).

Table 35.

Comparisons of CPO, SO, and NSO custody samples on LSI-OR variables

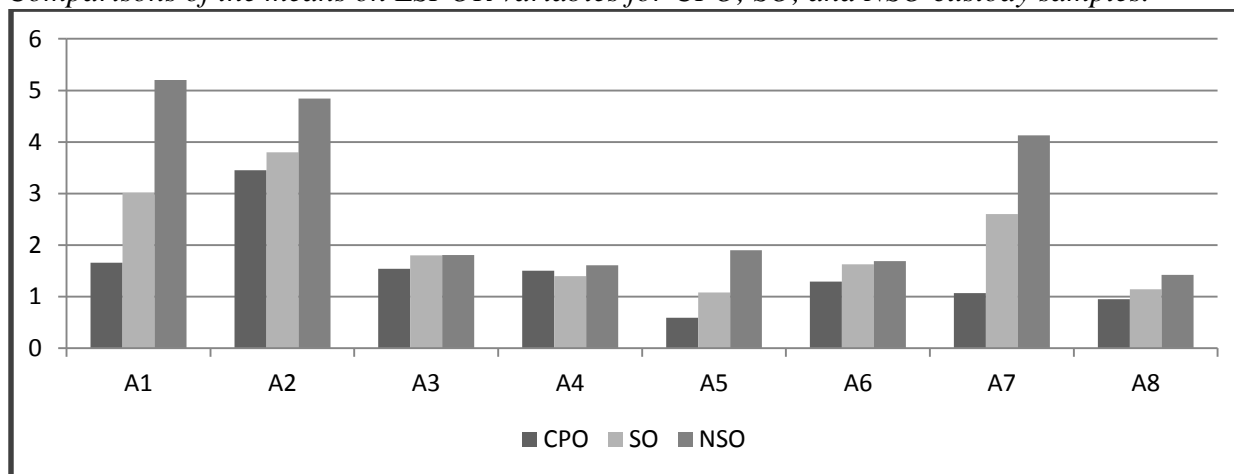
LSI-OR Variables	CPO Custody (n=157) Mean (SD)	SO Custody (n=517) Mean (SD)	NSO Custody (n=7421) Mean (SD)	ANOVA
General Risk/Needs	12.04 ^a (6.27)	16.46 ^b (8.74)	22.60 ^c (8.67)	$F(2, 8092) = 228.93, p < .001$
Strength	.35 ^a (0.96)	.47 ^a (1.07)	.34 ^b (.90)	$F(2, 8092) = 5.22, p = .005$
Initial Risk Level	2.61 ^a (0.85)	3.09 ^b (1.06)	3.77 ^c (.96)	$F(2, 8092) = 224.92, p < .001$
Risk Override	1.82 ^a (2.07)	1.37 ^b (1.96)	.22 ^c (.90)	$F(2, 8092) = 469.22, p < .001$
Final Risk Level (after override)	3.35 ^a (1.01)	3.59 ^b (.99)	3.80 ^c (.94)	$F(2, 8092) = 28.39, p < .001$
A1: Criminal History	1.66 ^a (1.62)	3.01 ^b (2.26)	5.20 ^c (2.11)	$F(2, 8092) = 461.69, p < .001$
A1: Strength	.05 ^a (.22)	.05 ^a (.21)	.03 ^b (.16)	$F(2, 8092) = 4.56, p = .010$
A2: Education/ Employment	3.45 ^a (2.39)	3.80 ^a (2.60)	4.84 ^b (2.74)	$F(2, 8092) = 53.56, p < .001$
A2: Strength	.06 (.24)	.11 (.31)	.09 (.29)	$F(2, 8092) = 1.52, p = .219$
A3: Family/Marital	1.54 ^a (1.10)	1.80 ^b (1.14)	1.81 ^b (1.20)	$F(2, 8092) = 3.75, p = .024$
A3: Strength	.04 (.21)	.09 (.29)	.08 (.27)	$F(2, 8092) = 1.96, p = .141$
A4: Leisure/ Recreation	1.50 ^a (.67)	1.40 ^a (.73)	1.61 ^b (.62)	$F(2, 8092) = 29.99, p < .001$

A4: Strength	.03 (.16)	.03 (.18)	.03 (.16)	$F(2, 8092) = 0.38, p = .686$
A5: Companions	.59 ^a (.78)	1.08 ^b (1.04)	1.90 ^c (.98)	$F(2, 8092) = 295.29, p < .001$
A5: Strength	.02 ^a (.14)	.05 ^b (.23)	.03 ^a (.17)	$F(2, 8092) = 5.77, p = .003$
A6: Procriminal Attitude/Orientation	1.29 ^a (1.10)	1.63 ^b (1.21)	1.69 ^b (1.30)	$F(2, 8092) = 7.82, p < .001$
A6: Strength	.02 (.14)	.04 (.20)	.03 (.18)	$F(2, 8092) = 1.22, p = .296$
A7: Substance Abuse	1.07 ^a (1.60)	2.60 ^b (2.63)	4.13 ^c (2.50)	$F(2, 8092) = 200.03, p < .001$
A7: Strength	.11 ^a (.32)	.09 ^a (.28)	.04 ^b (.20)	$F(2, 8092) = 21.80, p < .001$
A8: Antisocial Pattern	.95 ^a (.78)	1.14 ^a (.93)	1.42 ^b (1.10)	$F(2, 8092) = 29.83, p < .001$
A8: Strength	.01 (.11)	.01 (.09)	.01 (.10)	$F(2, 8092) = .24, p = .790$

Note: LSI-OR = Level of Service Inventory – Ontario Revision. CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender. ^{a,b,c} = Different lettered superscripts indicated that the Tukey post hoc test differences of the means were significant at $p < .05$; whereas, same lettered superscripts indicated that the differences of the means were not significant.

Figure 27.

Comparisons of the means on LSI-OR variables for CPO, SO, and NSO custody samples.



Note: LSI-OR = Level of Service Inventory – Ontario Revision. CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

The means and standard deviations for the remaining LSI-OR variables, including the specific risk/need factors, institutional factors, other client issues, and special responsibility

considerations, were also calculated for the CPO, SO, and NSO custody samples (Table 36). The custody offenders groups significantly differed on all variables; therefore, post hoc analyses were conducted for all of the variables. The results indicated that all custody offender groups significantly differed from each other on both subscales of the specific risk/need section. In addition, for the institutional factors subscale, the NSO custody sample significantly differed from both the CPO ($p = .014$) and the SO custody samples ($p < .001$). Similarly, for the barrier to release subscale, the NSO custody sample significantly differed from both the CPO ($p = .003$) and the SO custody samples ($p < .001$). When examining the results for the social, health, and mental health subscale, the significant differences of means was found between the NSO and SO custody samples ($p = .001$). Lastly, the significant differences of the means for the special responsivity considerations were found between the SO custody sample and both the CPO ($p < .001$) and NSO custody samples ($p < .001$).

Table 36.

Comparisons of CPO, SO, and NSO custody samples on LSI-OR variables

LSI-OR Variables	CPO Custody ($n=157$) Mean (SD)	SO Custody ($n=517$) Mean (SD)	NSO Custody ($n=7421$) Mean (SD)	ANOVA
Specific Risk/Needs:				
B1: Personal Problems with Criminogenic Potential	2.72 ^a (1.81)	3.52 ^b (2.08)	3.1 ^c (1.9)	$F(2, 8092) = 15.15, p < .001$
B2: History of Perpetration	.41 ^a (.80)	1.60 ^b (1.25)	1.84 ^c (1.48)	$F(2, 8092) = 79.01, p < .001$
C: Prison Experience: Institutional Factors	1.48 ^a (.84)	1.56 ^a (.98)	1.23 ^b (1.14)	$F(2, 8092) = 24.39, p < .001$
Other Client Issues:				
F1: Social, Health, and Mental Health	3.26 ^a (2.38)	3.25 ^a (2.50)	2.83 ^b (2.54)	$F(2, 8092) = 8.88, p < .001$
F2: Barrier to Release	.16 ^a (.37)	.15 ^a (.35)	.08 ^b (.28)	$F(2, 8092) = 16.47, p < .001$

G: Special Responsivity Considerations	1.27 ^a (1.07)	1.68 ^b (1.21)	1.43 ^a (1.08)	$F(2, 8092) = 14.75, p < .001$
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Note: LSI-OR = Level of Service Inventory – Ontario Revision. CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender. ^{a,b,c} = Different lettered superscripts indicated that the Tukey post hoc test differences of the means were significant at $p < .05$; whereas, same lettered superscripts indicated that the differences of the means were not significant.

Recidivism Variables for the CPO, SO, and NSO Custody Samples

CP Recidivism.

Of the total sample, six (0.1%) custody offenders received a new CP index offence (see Table 37). Of these, two were charged with one new CP charge and four were charged with two. Examining the CPO custody sample, a total of four (2.6%) CPOs recidivated wherein one received one new CP charge and three received two charges. In contrast, one (0.2%) custody SO recidivated receiving two new CP charges and one (0.01%) custody NSO recidivated receiving one new CP charge. The custody CPOs had higher rates of CP recidivism (2.6%) compared to the SO (0.2%) and NSO (0.01%) custody samples, $\chi^2(2) = 134.39, p < .001$.

Table 37.

Comparisons of CPO, SO, and NSO custody samples on CP recidivism

CP Recidivism	CPO	SO	NSO	Total
No Recontact:				
Count	153	516	7420	8089
% of Total	97.45%	99.81%	99.99%	99.9%
Recontact:				
Count	4	1	1	6
% of Total	2.55%	0.19%	0.01%	0.1%
Total:				
Count	157	517	7421	8095
% of Total	100%	100%	100%	100%

Note: CP = Child Pornography. CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

The custody offenders groups significantly differed on all CP recontact offences and the recontact total variable; therefore, post hoc analyses were conducted for all of the variables (see Table 38). The results indicated that the differences in the means on the ACP recontact variable for the custody CPOs significantly differed from both the SO ($p < .001$) and NSO ($p < .001$) custody samples. Similarly, for the CPF, CPP, and CPPO recontact variables and the recontact

total variable, the significant differences were found between the custody CPOs and both the SO ($p < .001$) and NSO ($p < .001$) custody samples. When examining the CPS recontact variable, the differences in the means were significant only for the SO and NSO custody samples ($p < .001$). Overall, compared to SO and NSO custody offenders, custody CPOs received significantly more CP recontact charges.

Table 38.

The number of CPO, SO, and NSO custody samples by type and number of CP recidivism offences

Type of CP Recontact Offences	Number of Offenders Charged with Recontact Offences			ANOVA Between CP Recontact Offences by Offender Group
	CPO (n)	SO (n)	NSO (n)	
Accessing CP:	2 ^a	-- ^b	-- ^b	$F(2, 8092) = 51.19, p < .001$
CP: Film/video charges:	1 ^a	-- ^b	-- ^b	$F(2, 8092) = 25.43, p < .001$
Publishing CP:	1 ^a	-- ^b	-- ^b	$F(2, 8092) = 25.43, p < .001$
Possessing CP:	3 ^a	1 ^b	1 ^b	$F(2, 8092) = 46.11, p < .001$
CP: Sell/distribute charges:	-- ^a	1 ^b	-- ^a	$F(2, 8092) = 7.34, p = .001$
Recontact Total CP Offences	4 ^a	1 ^b	1 ^b	$F(2, 8092) = 70.40, p < .001$

Note: CP = Child Pornography. CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender. ^{a,b,c} = Different lettered superscripts indicated that the Tukey post hoc test differences of the means were significant at $p < .001$; whereas, same lettered superscripts indicated that the differences of the means were not significant.

Other Recidivism Variables.

The three recidivism variables, sexual, violent, and general recidivism were analyzed by the type of offender group for the custody offenders (see Tables 39 to 41). Among the custody offenders captured in the total sample, the sexual recidivism rate was 0.5%, while the violent recidivism rate was 12.2%, and the general recidivism rate was 43.1%.

Table 39.

Comparisons of CPO, SO, and NSO custody samples on sexual recidivism

Sexual Recidivism	CPO	SO	NSO	Total
No Recontact:				
Count	152	509	7396	8057

% of Total	96.82%	98.45%	99.66%	99.5%
Recontact:				
Count	5	8	25	38
% of Total	3.18%	1.55%	0.34%	0.5%
Total:				
Count	157	517	7421	8095
% of Total	100%	100%	100%	100%

Note: CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

Table 40.

Comparisons of CPO, SO, and NSO custody samples on violent recidivism

Violent Recidivism	CPO	SO	NSO	Total
No Recontact:				
Count	156	488	6461	7105
% of Total	99.36%	94.39%	87.06%	87.8%
Recontact:				
Count	1	29	960	990
% of Total	0.64%	5.61%	12.94%	12.2%
Total:				
Count	157	517	7421	8095
% of Total	100%	100%	100%	100%

Note: CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

Table 41.

Comparisons of CPO, SO, and NSO custody samples on general recidivism

General Recidivism	CPO	SO	NSO	Total
No Recontact:				
Count	140	426	4038	4604
% of Total	89.17%	82.4%	54.41%	56.9%
Recontact:				
Count	17	91	3383	3491
% of Total	10.83%	17.6%	45.59%	43.1%
Total:				
Count	157	517	7421	8095
% of Total	100%	100%	100%	100%

Note: CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

The custody CPOs had the highest sexual recidivism rate compared to the SO and NSO custody samples, 3.2% compared to 1.6% and 0.3%, respectively (see Table 42). While the custody NSOs had the highest violent recidivism rate compared to the CPO and SO custody samples, 12.9% compared to 0.6% and 5.6%. As well, the custody NSOs had a higher rate of general recidivism (45.6%) compared to the CPO (10.8%) and SO (17.6%) custody samples. The average lapse time was not significantly different for the three offender groups; although,

the custody NSOs recidivated slightly quicker. The offence severity levels were significantly different for the three custody offender groups and post hoc analysis revealed that the difference in the means for the custody NSOs was significantly different from the custody SOs ($p < .001$). The custody SOs received the shortest sentence lengths compared to the CPO and NSO custody samples. The majority of offenders in all three groups received custodial sentences for their recontact offence.

Table 42.

Comparisons of CPO, SO, and NSO custody samples on recidivism variables

Recidivism Variables	CPO Custody (n=157) Mean (SD) or n (%)	SO Custody (n=517) Mean (SD) or n (%)	NSO Custody (n=7421) Mean (SD) or n (%)	ANOVA or Chi Squares
Sexual Recidivism	5 (3.2%)	8 (1.6%)	25 (0.3%)	$\chi^2(2) = 40.42, p < .001$
Violent Recidivism	1 (0.6%)	29 (5.6%)	960 (12.9%)	$\chi^2(2) = 44.22, p < .001$
General Recidivism	17 (10.8%)	91 (17.6%)	3383 (45.6%)	$\chi^2(2) = 222.42, p < .001$
Lapse Time	366.56 (239.89)	366.48 (218.88)	317.10 (225.14)	$F(2, 3642) = 2.62, p < .073$
New Most Serious Offence (MSO) Severity Level	14 ^a (6)	14 ^a (5)	16 ^b (5)	$F(2, 3642) = 10.38, p < .001$
Sentence Length	335.94 (336.40)	197.91 (374.40)	205.61(287.06)	$F(2, 3642) = 1.85, p = .158$
New Sentence Type:				
Custody	16 (88.9%)	71 (75.5%)	2824 (79.9%)	$\chi^2(4) = 3.61, p = .461$
Probation	2 (11.1%)	16 (17.0%)	557 (15.8%)	
Conditional Sentence	--	7 (7.4%)	152 (4.3%)	

Note: CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender. ^{a,b,c} = Different lettered superscripts indicated that the Tukey post hoc test differences of the means were significant at $p < .05$; whereas, same lettered superscripts indicated that the differences of the means were not significant.

Use of the Override

CPO, SO, and NSO Custody Samples.

An analysis of the initial risk level and the resulting final risk level, after accounting for the use of the override, was conducted for the CPO, SO, and NSO custody groups, using chi

square tests. It was found that the override feature was used with a total of 676 custody offenders: 71 (45.2%) custody CPOs, 175 (33.8%) custody SOs, and 430 (5.8%) custody NSOs. The use of the override feature to increase or decrease an offender's risk level was significantly different between the custody offender groups, $F(2, 8092) = 469.22, p < .001$. Post hoc analysis revealed that the differences in the means were significantly different between all three custody offender groups ($p < .001$). These results for the difference between the initial and final risk level were significant for the custody CPOs ($\chi^2(16) = 145.22, p < .001$). A common pattern of significant results were found between the initial and final risk level for the custody SOs ($\chi^2(16) = 794.43, p < .001$) and the custody NSOs ($\chi^2(16) = 25210.05, p < .001$). The contingency tables which display the frequency distribution of these variables for these analyses are displayed in Tables 43 to 45.

Table 43.
Initial risk level by final risk level for custody CPOs

Initial Risk Level	Final Risk After Override					Total
	Very Low	Low	Medium	High	Very High	
Very Low						
Count	4	0	3	2	2	11
% of Total	36.4%	0.0%	27.2%	18.2%	18.2%	7.0%
Low						
Count	0	29	13	17	4	63
% of Total	0.0%	46.0%	20.6%	27.0%	6.4%	40.1%
Medium						
Count	0	0	36	16	11	63
% of Total	0.0%	0.0%	57.1%	25.4%	17.5%	40.1%
High						
Count	0	0	0	15	2	17
% of Total	0.0%	0.0%	0.0%	88.2%	11.8%	10.8%
Very High						
Count	0	0	1	0	2	3
% of Total	0.0%	0.0%	33.3%	0.0%	66.7%	1.9%
Total						
Count	4	29	53	50	21	157
% of Total	2.5%	18.5%	33.8%	31.8%	13.4%	100%

Note. CPO = Child Pornography Offender. Cell percentages are the percentage of the initial risk levels (rows), while total percentages are the percentage of all of the offenders.

Table 44.

Initial risk level by final risk level for custody SOs

Initial Risk Level	Final Risk After Override					Total
	Very Low	Low	Medium	High	Very High	
Very Low						
Count	17	1	7	11	2	38
% of Total	44.7%	2.6%	18.5%	28.9%	5.3%	7.4%
Low						
Count	0	49	19	33	8	109
% of Total	0.0%	45.0%	17.4%	30.3%	7.3%	21.1%
Medium						
Count	0	0	115	53	16	184
% of Total	0.0%	0.0%	62.5%	28.8%	8.7%	35.6%
High						
Count	0	0	5	119	18	142
% of Total	0.0%	0.0%	3.5%	83.8%	12.7%	27.5%
Very High						
Count	0	0	1	0	43	44
% of Total	0.0%	0.0%	2.3%	0.0%	97.7%	8.5%
Total						
Count	17	50	147	216	87	517
% of Total	3.3%	9.7%	28.4%	41.8%	16.8%	100%

Note. SO = Sexual Offender. Cell percentages are the percentage of the initial risk levels (rows), while total percentages are the percentage of all of the offenders.

Table 45.

Initial risk level by final risk level for custody NSOs

Initial Risk Level	Final Risk After Override					Total
	Very Low	Low	Medium	High	Very High	
Very Low						
Count	103	1	12	4	0	120
% of Total	85.8%	0.8%	10%	3.4%	0.0%	1.6%
Low						
Count	0	519	64	22	3	608
% of Total	0.0%	85.2%	10.6%	3.7%	0.5%	8.2%
Medium						
Count	0	4	1791	122	9	1926
% of Total	0.0%	0.2%	93.0%	6.3%	0.5%	26%
High						
Count	0	0	82	2821	74	2977
% of Total	0.0%	0.0%	2.7%	94.8%	2.5%	40.1%
Very High						
Count	0	0	20	6	1764	1790

% of Total	0.0%	0.0%	1.2%	0.3%	98.5%	24.1%
Total						
Count	103	524	1969	2975	1850	7421
% of Total	1.4%	7.1%	26.5%	40.1%	24.9%	100%

Note. NSO = Non-sexual Offender. Cell percentages are the percentage of the initial risk levels (rows), while total percentages are the percentage of all of the offenders.

Correlations between LSI-OR and Recidivism Variables

CPO, SO, and NSO Custody Samples.

The correlations between various aspects of the LSI-OR and CP, sexual, violent, and general recidivism were also examined for the CPO, SO, and NSO custody groups to assess the applicability of the LSI-OR to the different offender populations. It is important to note that although correlations were conducted for all four recidivism variables, the results must be taken with caution for CP and sexual recidivism due to the low base rates (i.e., below 10%). These correlations were calculated for the: general risk/need total score, total strength score, initial risk level, final risk level after the override use, the eight domain scores, two subscales from the specific risk/need factors section, institutional factors, two subscales from the other client issues section, and special responsivity considerations. When examining the correlations for CP recidivism among the custody offender groups, none of correlations were significant, with the exception of the initial and final risk levels for the SO custody group and the social, health, and mental health subscale for the NSO custody group (Table 46). In addition, there were no significant correlations for sexual recidivism among the CPO and SO custody groups. However, approximately half of the correlations for sexual recidivism among the NSO custody sample were significant (see Table 47).

Table 46.

Correlations between LSI-OR variables with CP recidivism for CPO, SO, and NSO custody samples

	CP Recidivism		
	CPO Custody (n=157)	SO Custody (n=517)	NSO Custody (n = 7421)
General Risk/Needs	-.053	-.073	.002
Strength	.068	-.019	-.004
Initial Risk Level	-.020	-.087*	.003
Final Risk Level	-.096	-.116**	.002
A1: Criminal History	-.041	-.059	-.007

A2: Education/ Employment	-.064	-.064	.009
A3: Family/Marital	.031	-.031	.012
A4: Leisure/ Recreation	.001	-.024	.007
A5: Companions	-.019	-.046	.001
A6: Procriminal Attitude/Orientation	-.042	-.060	-.006
A7: Substance Abuse	-.007	-.044	-.001
A8: Antisocial Pattern	-.093	-.054	-.004
B1: Personal Problems with Criminogenic Potential	.003	-.032	.012
B2: History of Perpetration	-.083	-.057	-.014
C1: Institutional Factors	.051	-.070	-.013
F1: Social, Health, and Mental Health	-.001	-.040	.024*
F2: Barrier to Release	.040	-.018	-.004
G1: Special Responsivity Considerations	-.004	-.025	-.005

Note: LSI-OR = Level of Service Inventory – Ontario Revision. CP = Child Pornography. CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

**Correlation is significant at the .01 level (2-tailed)

* Correlation is significant at the .05 level (2-tailed)

Table 47.

Correlations between LSI-OR Variables with sexual recidivism for CPO, SO, and NSO custody samples

	Sexual Recidivism		
	CPO Custody (n=157)	SO Custody (n=517)	NSO Custody (n = 7421)
General Risk/Needs	-.030	-.021	.027*
Strength	.047	-.041	.007
Initial Risk Level	-.001	-.010	.026*
Final Risk Level	-.099	-.012	.025*
A1: Criminal History	-.029	-.007	.029*
A2: Education/ Employment	-.034	-.008	.029*
A3: Family/Marital	.043	-.019	.011
A4: Leisure/ Recreation	.028	-.047	.006
A5: Companions	-.045	-.009	.004
A6: Procriminal Attitude/Orientation	.019	-.027	.001
A7: Substance Abuse	-.031	-.011	.021
A8: Antisocial Pattern	-.081	-.019	.018
B1: Personal Problems with Criminogenic Potential	.048	-.009	.023*
B2: History of Perpetration	-.093	-.073	.024*
C1: Institutional Factors	.111	.056	.031**
F1: Social, Health, and Mental Health	.026	-.013	.027*
F2: Barrier to Release	.020	-.008	-.001

G1: Special Responsibility Considerations	.056	-.045	.026*
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Note: LSI-OR = Level of Service Inventory – Ontario Revision. CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

**Correlation is significant at the .01 level (2-tailed)

* Correlation is significant at the .05 level (2-tailed)

None of the correlations for violent recidivism among the CPO custody sample was significant, while most of the correlations for violent recidivism among the NSO custody group were significant. In addition, only about half of the correlations between violent recidivism and the SO custody group were significant (Table 48). All of the correlations for general recidivism among the NSO custody sample and nearly all the correlations among the SO custody sample were significant (Table 49). However, very few of the correlations for general recidivism among the custody CPOs were significant.

Table 48.

Correlations between LSI-OR variables with violent recidivism for CPO, SO, and NSO custody samples

	Violent Recidivism		
	CPO Custody (n=157)	SO Custody (n=517)	NSO Custody (n = 7421)
General Risk/Needs	.089	.162**	.167**
Strength	-.029	-.037	-.010
Initial Risk Level	.038	.139**	.162**
Final Risk Level	.131	.067	.157**
A1: Criminal History	.067	.181**	.132**
A2: Education/ Employment	.019	.100*	.121**
A3: Family/Marital	-.040	.080	.097**
A4: Leisure/ Recreation	.061	.039	.086**
A5: Companions	.146	.168**	.103**
A6: Procriminal Attitude/Orientation	.052	.095*	.080**
A7: Substance Abuse	.147	.101*	.123**
A8: Antisocial Pattern	.005	.081	.138**
B1: Personal Problems with Criminogenic Potential	.101	.105*	.165**
B2: History of Perpetration	.059	.206**	.163**
C1: Institutional Factors	.144	.169**	.111**
F1: Social, Health, and Mental Health	.059	.053	.103**
F2: Barrier to Release	-.035	.041	.012

G1: Special Responsivity Considerations	.130	.093*	.115**
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Note: LSI-OR = Level of Service Inventory – Ontario Revision. CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

**Correlation is significant at the .01 level (2-tailed)

* Correlation is significant at the .05 level (2-tailed)

Table 49.

Correlations between LSI-OR variables with general recidivism for CPO, SO, and NSO custody samples

	General Recidivism		
	CPO Custody (n=157)	SO Custody (n=517)	NSO Custody (n = 7421)
General Risk/Needs Strength	.126	.339**	.388**
Initial Risk Level	.129	-.066	-.047**
Final Risk Level	.066	.309**	.371**
A1: Criminal History	.062	.192**	.354**
A2: Education/ Employment	.163*	.257**	.353**
A3: Family/Marital	-.039	.262**	.261**
A4: Leisure/ Recreation	.127	.163**	.206**
A5: Companions	.141	.164**	.210**
A6: Procriminal Attitude/Orientation	.184*	.304**	.262**
A7: Substance Abuse	.096	.149**	.212**
A8: Antisocial Pattern	.075	.275**	.267**
B1: Personal Problems with Criminogenic Potential	.023	.194**	.304**
B2: History of Perpetration	.270**	.224**	.291**
C1: Institutional Factors	.130	.221**	.240**
F1: Social, Health, and Mental Health	.116	.196**	.241**
F2: Barrier to Release	.195*	.028	.199**
G1: Special Responsivity Considerations	-.040	.066	.045**
	.161*	.068	.179**

Note: LSI-OR = Level of Service Inventory – Ontario Revision. CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

**Correlation is significant at the .01 level (2-tailed)

* Correlation is significant at the .05 level (2-tailed)

Follow-up Time

The follow-up for the custody offenders was calculated by subtracting the follow-up date (i.e., July 1, 2014) from their release date. The follow-up time for all of the custody offenders was 1,323 days ($M = 1323.07$; $SD = 202.56$). When examining the offender groups separately,

the follow-up time for the custody CPOs was 1,280 days ($M = 1280.41$; $SD = 219.83$), 1,304 days ($M = 1304.46$; $SD = 204.39$) for the custody SOs, and 1,325 days ($M = 1325.27$; $SD = 201.92$) for the custody NSOs. In sum, the custody NSOs had the longest follow-up periods in comparison to the CPOs and SOs.

Survival Analysis (Time at Risk)

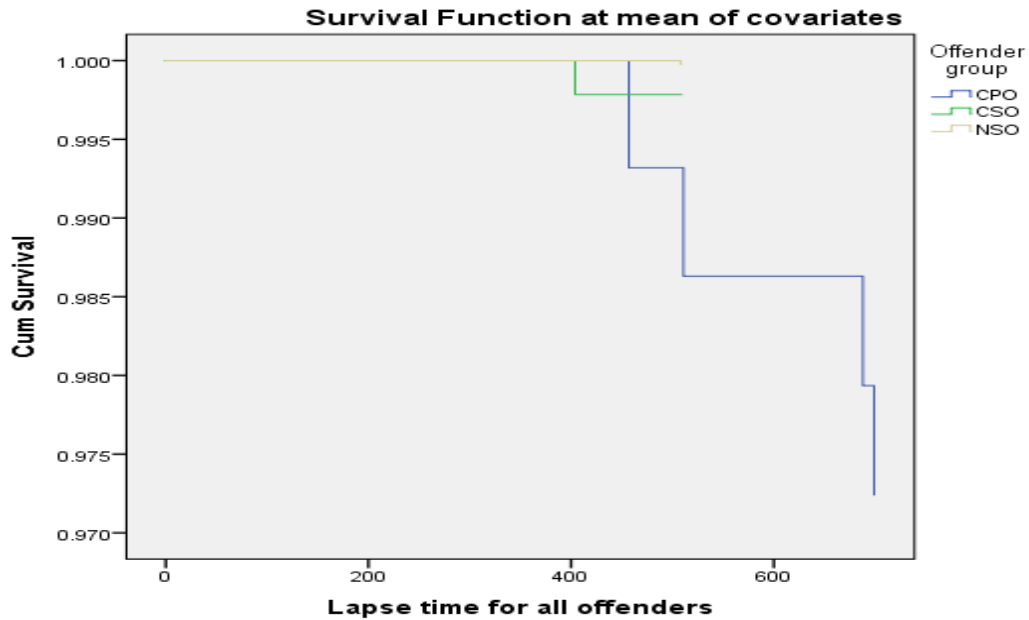
The mean survival time for the offender groups was analyzed using cox regression survival analysis. A survival time variable was created using four separate equations for the offenders and combining the results from these four into one variable. Specifically, the equations were as follows: an offender's recidivism date subtracted from the offender's release date for the custody recidivists; the follow-up date subtracted from an offender's release date for the custody non-recidivists; an offender's recidivism date subtracted from their LSI-OR assessment date for the community recidivists; and the follow-up date subtracted from the LSI-OR assessment date for the community non-recidivists. The mean survival time for all of the custody offenders was 869 days ($M = 869.15$; $SD = 540.28$). When examining the custody offender groups separately, the mean survival time for the custody CPOs was 1,174 days ($M = 1174.33$; $SD = 365.04$), 1,136 days ($M = 1136.07$; $SD = 416.43$) for the custody SOs, and 844 days ($M = 844.10$; $SD = 544.05$) for the custody NSOs. The custody CPOs experienced longer survival in the community once released.

CP, Sexual, Violent, and General Recidivism.

A custody offender's time spent on release was calculated for the four recidivism variables using Cox regression/survival analysis. Figure 28 illustrates the survival curves for the three custody offender groups for CP recidivism. The SO and NSO custody samples had an estimated probability of survival that was greater than for the CPO custody sample. When examining sexual recidivism, Figure 29 portrays that the custody NSOs had an estimated probability of survival that was greater than the CPO and SO custody groups. Alternatively, when investigating violent recidivism, the CPO and SO custody groups had an estimated probability of survival that was greater than for the NSO custody group (Figure 30). The survival curve for the three offender groups for general recidivism is illustrated in Figure 31. The custody CPOs had an estimated probability of survival that was greater than for both the custody SOs and custody NSOs.

Figure 28.

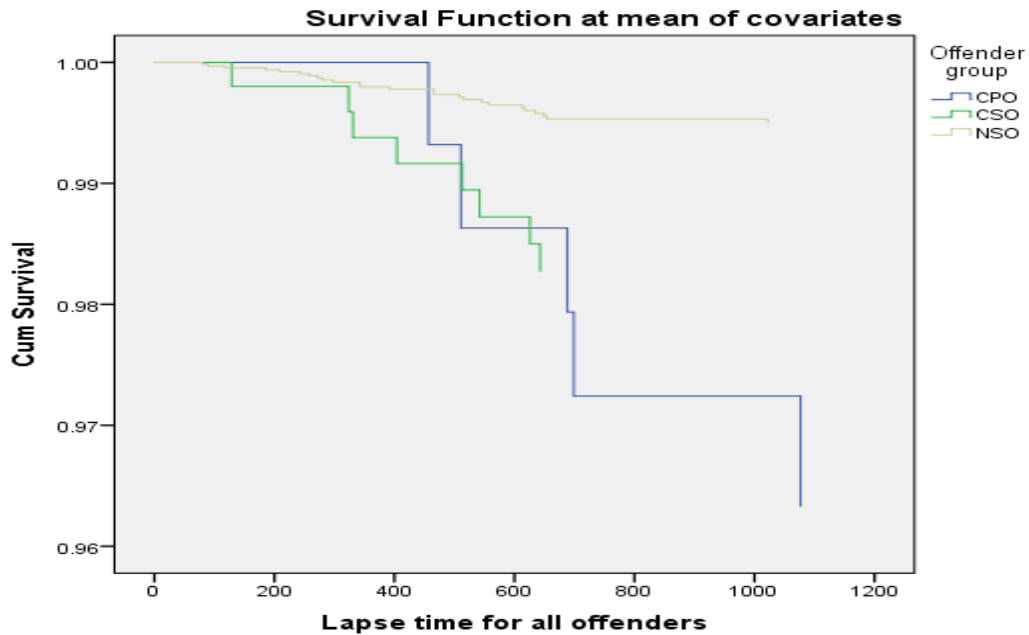
Survival curves for the CPO, SO, and NSO custody samples for CP recidivism.



Note: CP = Child Pornography. CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

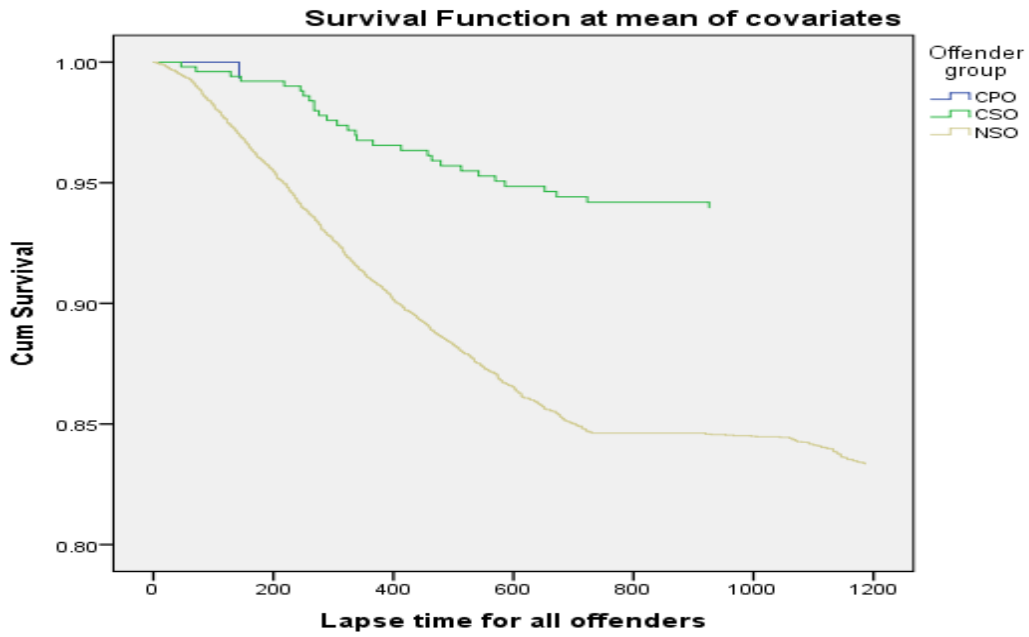
Figure 29.

Survival curves for the CPO, SO, and NSO custody samples for sexual recidivism.



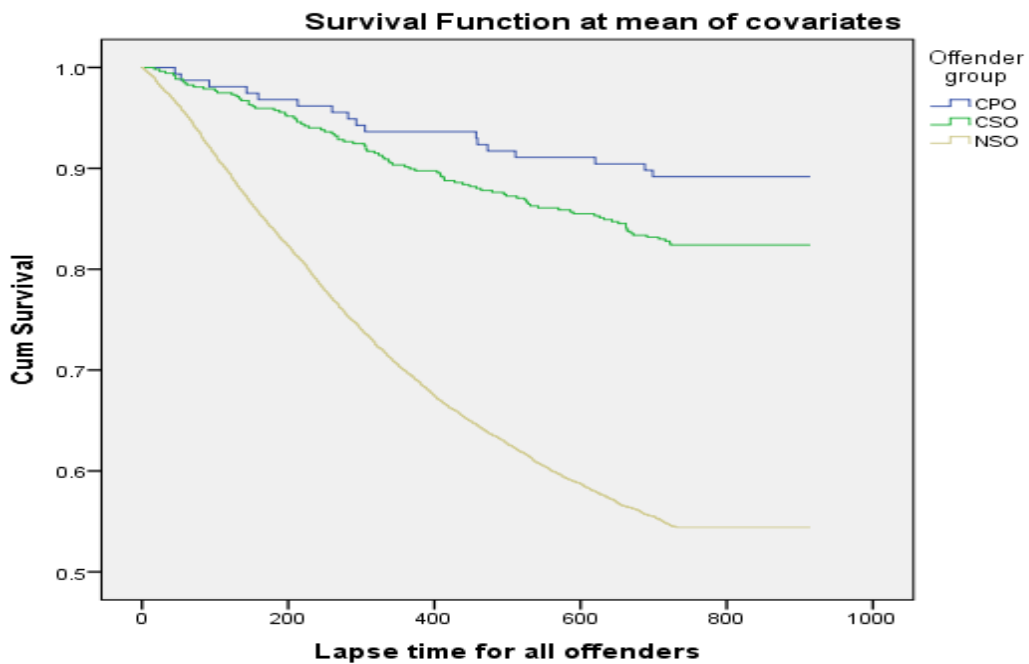
Note: CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

Figure 30.
Survival curves for the CPO, SO, and NSO custody samples for violent recidivism.



Note: CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

Figure 31.
Survival curves for the CPO, SO, and NSO custody samples for general recidivism.



Note: CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

ROC Coefficients for LSI-OR Total and Risk Levels with Recidivism Variables

A series of ROC analyses were conducted to examine the LSI-OR total and risk levels with CP, sexual, violent, and general recidivism for the CPO, SO, and NSO custody groups. The AUC values for the CPO, SO, and NSO custody groups for the four recidivism variables are presented in Table 50. An analysis of the general risk/need total score in relation to CP recidivism produced a ROC of $AUC = .331$ for the custody CPOs, an $AUC = .016$ for the custody SOs, and an $AUC = .539$ for the custody NSOs. These results revealed that the total score was only predictive of CP recidivism with the custody NSOs. Both the initial and final risk levels were found to not be predictive of CP recidivism with all three offender groups. Thus, the LSI-OR total score was only able to weakly predict CP recidivism in the NSO custody sample but performed poorly for both the CPO and SO custody samples. An analysis of the general risk/need total score in relation to sexual recidivism produced a ROC of $AUC = .414$ for the custody CPOs, an $AUC = .444$ for the custody SOs, and an $AUC = .640$ for the custody NSOs. The results demonstrated that the total score was only predictive of sexual recidivism for the custody NSOs. Similarly, the LSI-OR risk levels were only able to predict sexual recidivism in the NSO custody sample but performed poorly for both the CPO and SO custody samples. The initial risk level outperformed the final risk level for sexual recidivism with the custody NSOs.

An analysis of the general risk/need total score in relation to violent recidivism produced a ROC of $AUC = .862$ for the custody CPOs, an $AUC = .702$ for the custody SOs, and an $AUC = .643$ for the custody NSOs. Interestingly, the lower AUC value for the custody NSOs indicates that there is a decrease in predictive accuracy of violent recidivism for these offenders compared to both the CPO and SO samples. The initial risk level was only predictive of violent recidivism with the SO and NSO custody groups; whereas, the final risk level was only predictive for the CPO and NSO custody groups. An analysis of the general risk/need total score in relation to general recidivism produced a ROC of $AUC = .597$ for the custody CPOs, an $AUC = .748$ for the custody SOs, and an $AUC = .724$ for the custody NSOs. The general risk/needs total score was not predictive of general recidivism for the custody CPOs. Interestingly, the general risk/need total score was slightly better able to predict general recidivism among the custody SOs compared to the custody NSOs. The LSI-OR and its risk levels were able to predict general recidivism in the SO and NSO custody samples, with the initial risk level performing better than

the final risk level. However, the LSI-OR risk levels were not predictive of general recidivism for the CPO custody sample. Figures 32 to 43 portrays the ROC curves for the custody offender groups for the four recidivism variables.

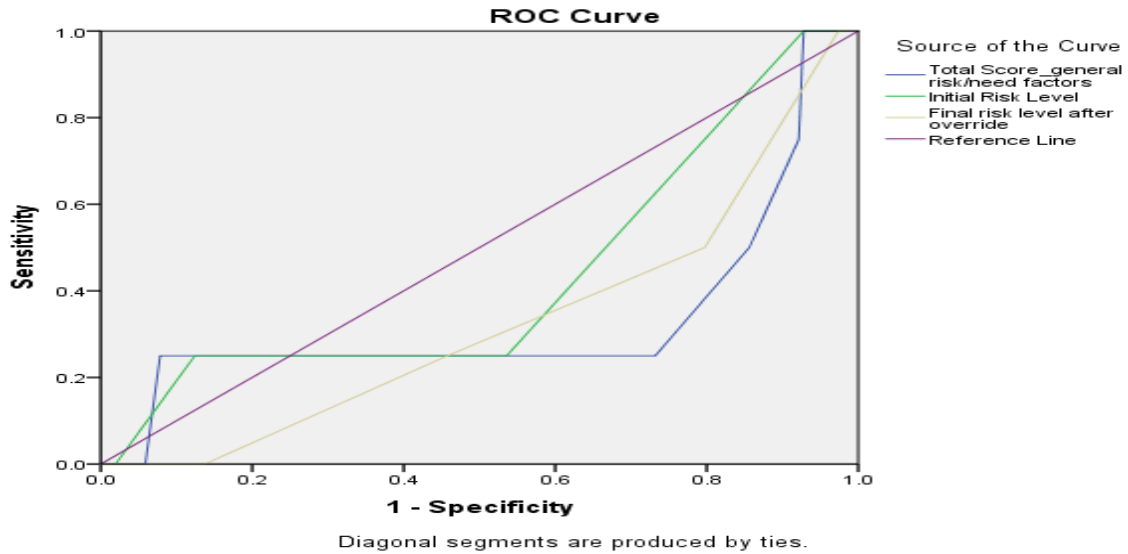
Table 50.

AUC Values for the CPO, SO, and NSO custody groups on recidivism variables

LSI-OR Variables & Recidivism Type	CPO Custody (AUC [95% CI])	SO Custody (AUC [95% CI])	NSO Custody (AUC [95% CI])
CP Recidivism:			
General Risk/Needs	.331 (.000, .677)	.016 (.004, .029)	.539 (.513, .564)
Initial Risk Level	.433 (.132, .734)	.036 (.000, .079)	.558 (.331, .785)
Final Risk Level After Override	.326 (.073, .579)	.016 (.000, .036)	.550 (.323, .777)
Sexual Recidivism:			
General Risk/Needs	.414 (.101, .728)	.444 (.244, .645)	.640 (.540, .741)
Initial Risk Level	.482 (.222, .742)	.475 (.274, .675)	.628 (.531, .724)
Final Risk Level After Override	.335 (.126, .544)	.488 (.265, .712)	.621 (.524, .718)
Violent Recidivism:			
General Risk/Needs	.862 (.805, .919)	.702 (.618, .786)	.643 (.626, .661)
Initial Risk Level	.673 (.437, .909)	.672 (.588, .755)	.634 (.616, .652)
Final Risk Level After Override	.936 (.854, .1.00)	.568 (.476, .661)	.629 (.611, .647)
General Recidivism:			
General Risk/Needs	.597 (.443, .751)	.748 (.695, .801)	.724 (.712, .735)
Initial Risk Level	.558 (.419, .697)	.728 (.676, .781)	.705 (.694, .717)
Final Risk Level After Override	.552 (.407, .697)	.636 (.578, .695)	.695 (.683, .707)

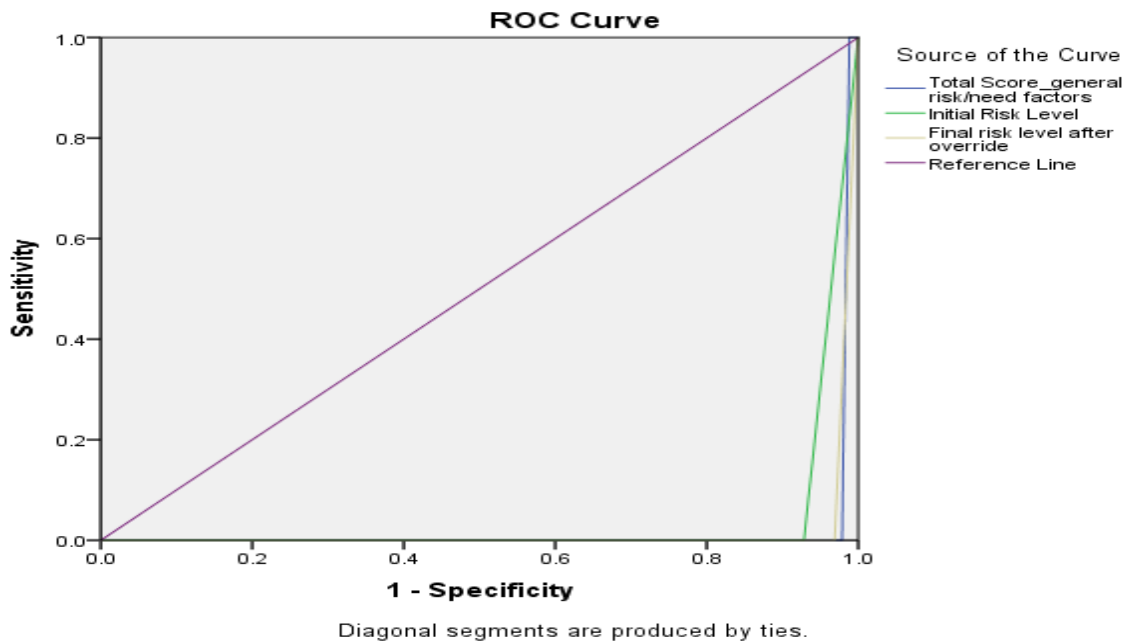
Note: AUC = Area under the Curve. CP = Child Pornography. CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

Figure 32.
 ROC curve on CP recidivism for the custody CPOs.



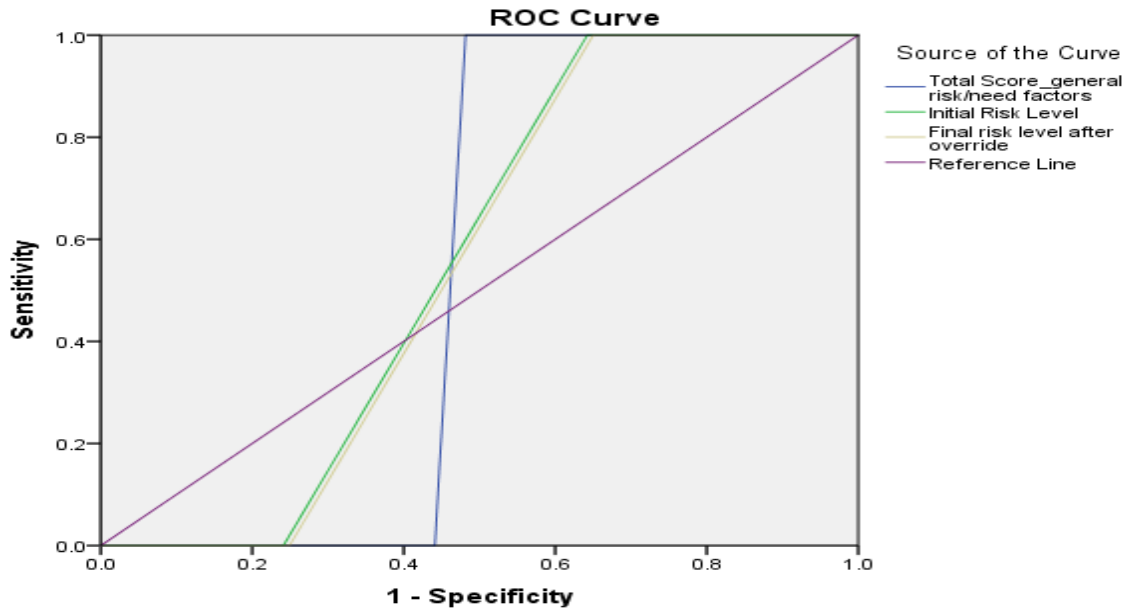
Note: ROC = Receiver Operator Characteristic. CP = Child Pornography. CPO = Child Pornography Offender.

Figure 33.
 ROC curve on CP recidivism for the custody SOs.



Note: ROC = Receiver Operator Characteristic. CP = Child Pornography. SO = Sexual Offender.

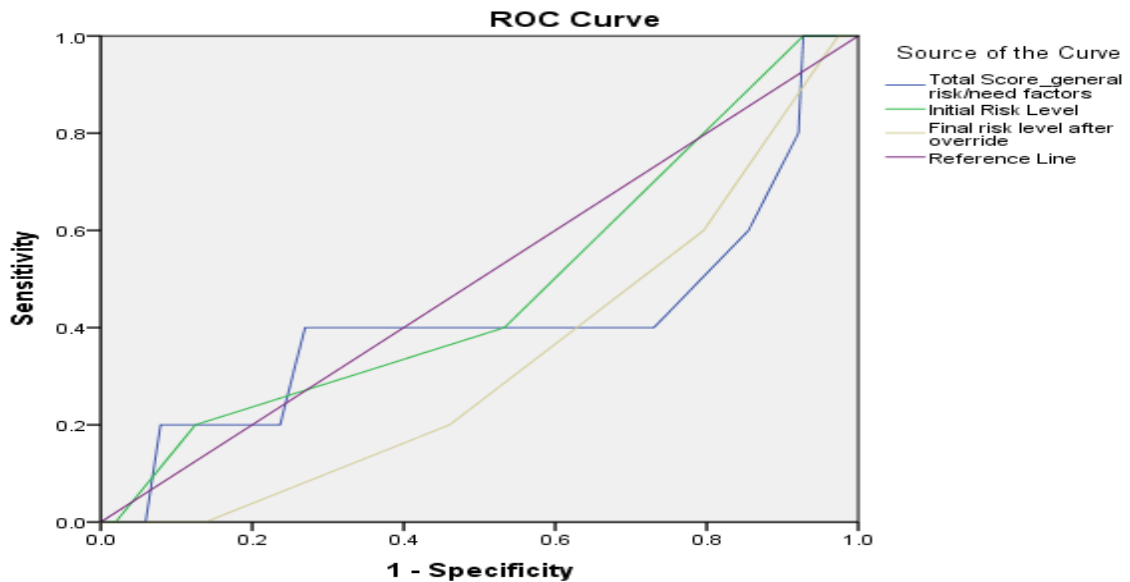
Figure 34.
 ROC curve on CP recidivism for the custody NSOs.



Diagonal segments are produced by ties.

Note: ROC = Receiver Operator Characteristic. CP = Child Pornography. NSO = Non-sexual Offender.

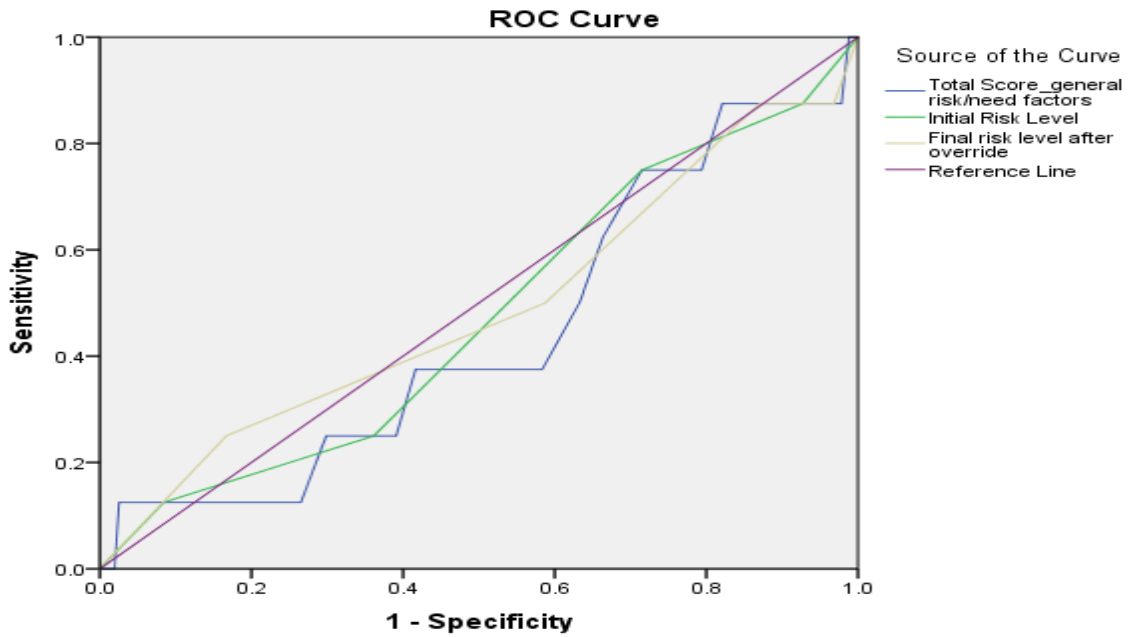
Figure 35.
 ROC curve on sexual recidivism for the custody CPOs.



Diagonal segments are produced by ties.

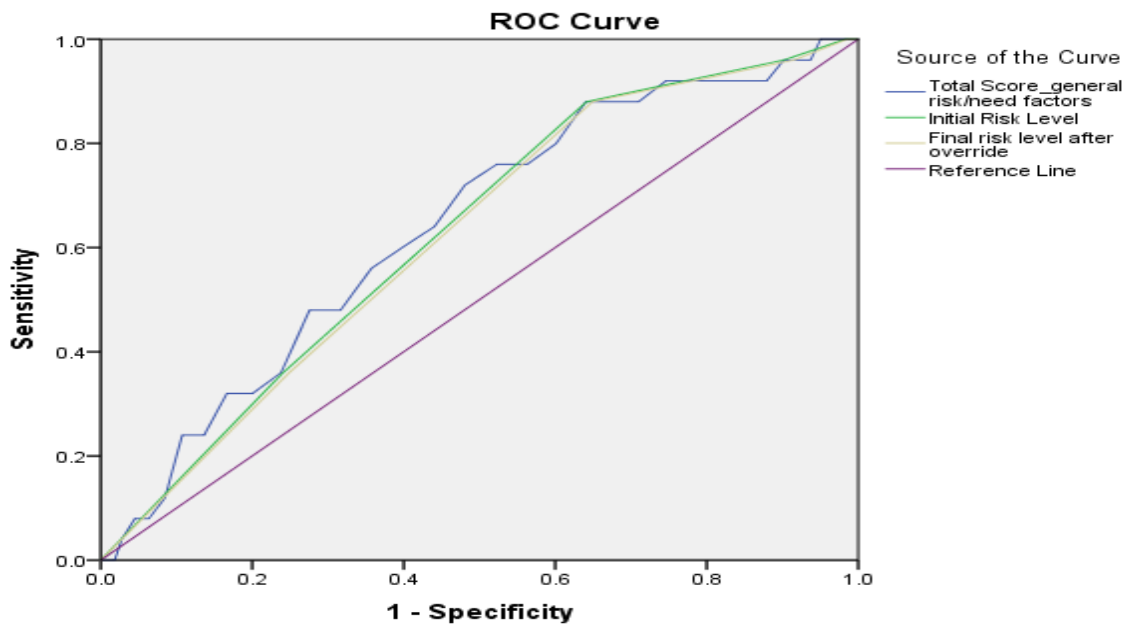
Note: ROC = Receiver Operator Characteristic. CPO = Child Pornography Offender.

Figure 36.
ROC curve on sexual recidivism for the custody SOs.



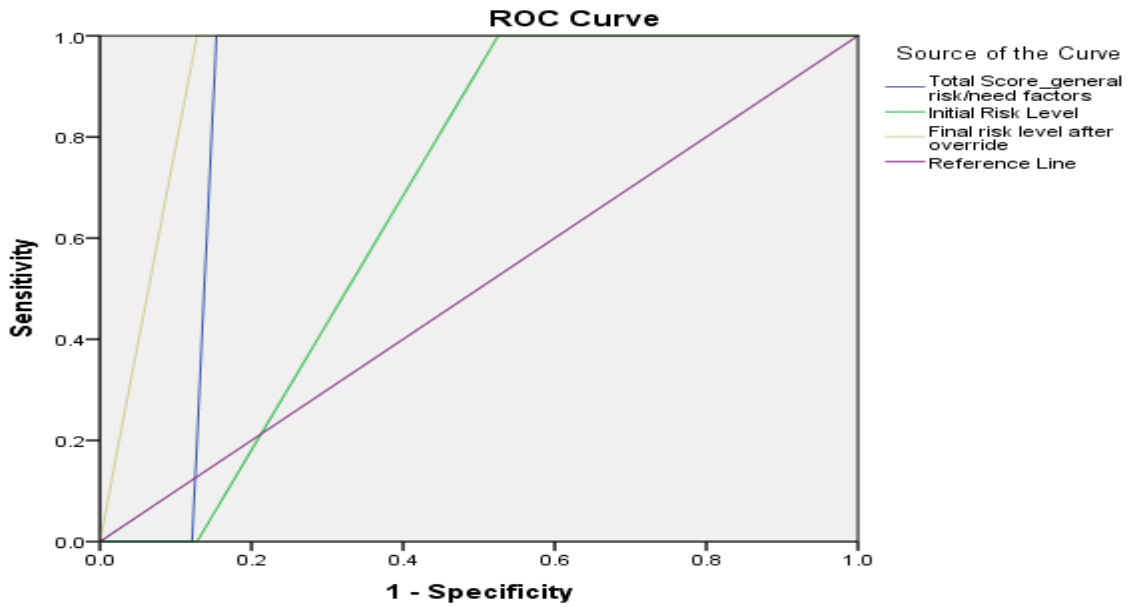
Note: ROC = Receiver Operator Characteristic. SO = Sexual Offender.

Figure 37.
ROC curve on sexual recidivism for the custody NSOs.



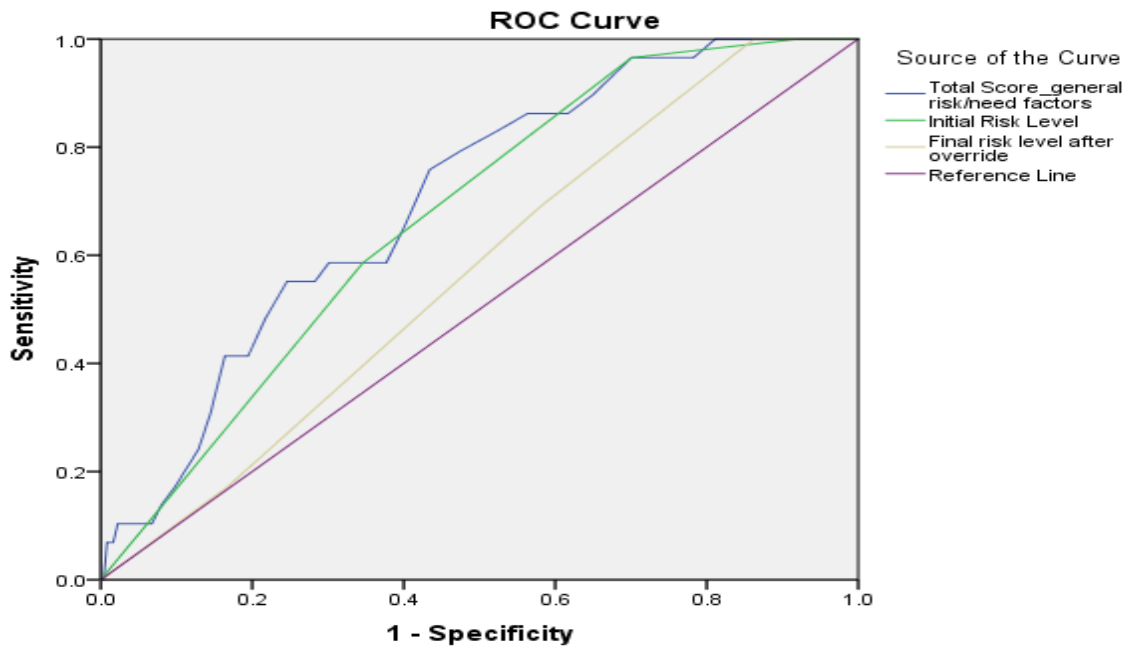
Note: ROC = Receiver Operator Characteristic. NSO = Non-sexual Offender.

Figure 38.
ROC curve on violent recidivism for the custody CPOs.



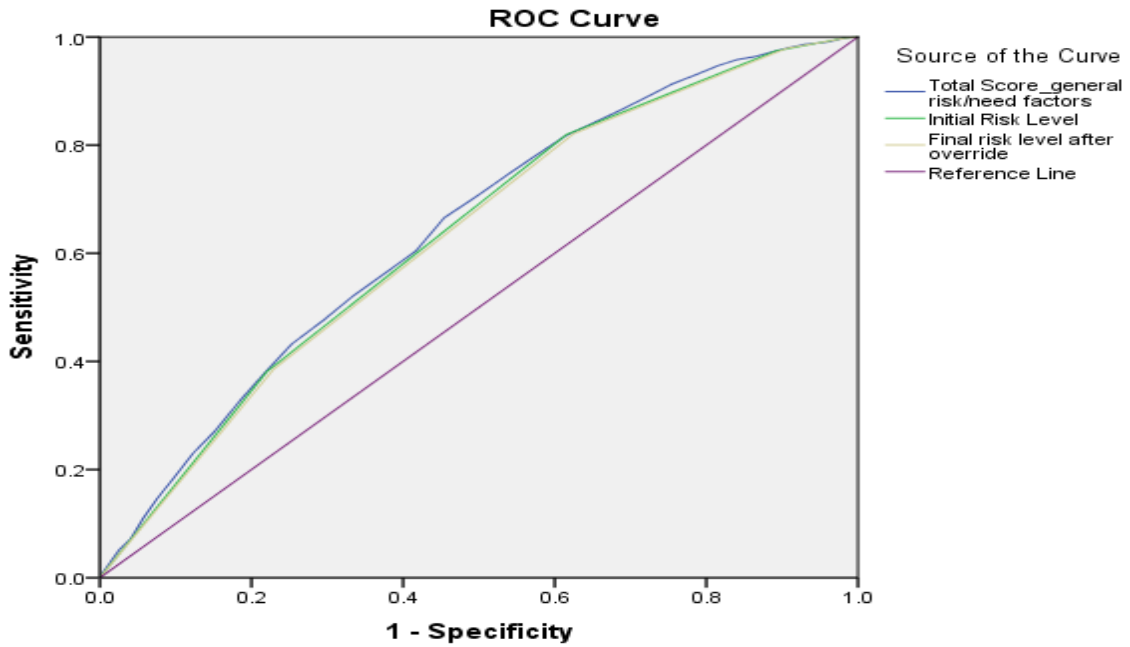
Note: ROC = Receiver Operator Characteristic. CPO = Child Pornography Offender.

Figure 39.
ROC curve on violent recidivism for the custody SOs.



Note: ROC = Receiver Operator Characteristic. SO = Sexual Offender.

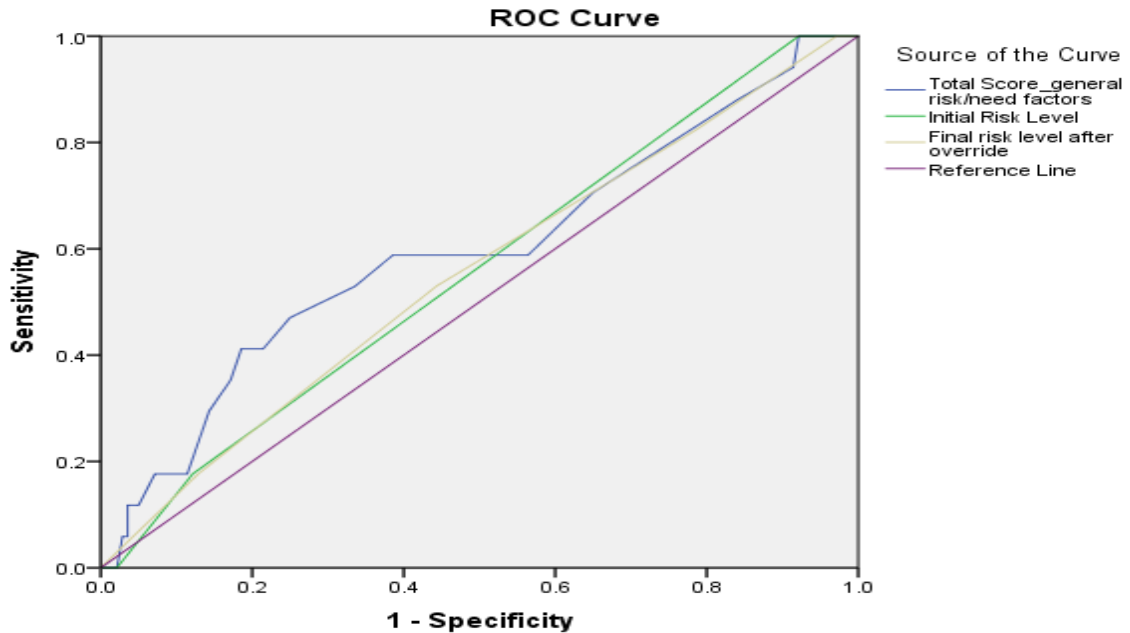
Figure 40.
ROC curve on violent recidivism for the custody NSOs.



Diagonal segments are produced by ties.

Note: ROC = Receiver Operator Characteristic. NSO = Non-sexual Offender.

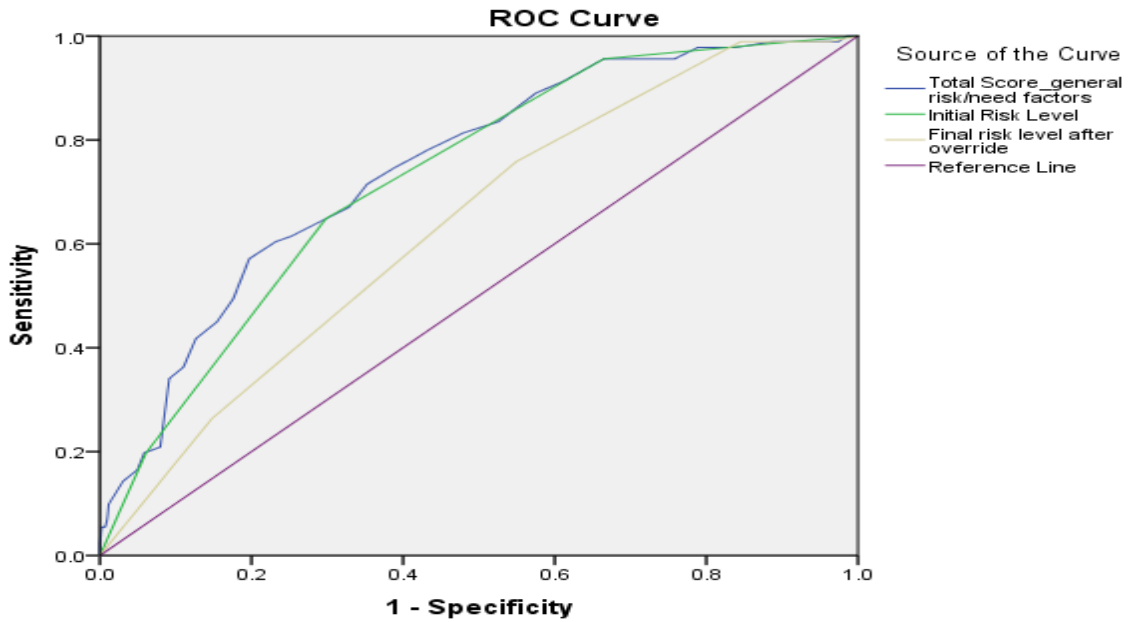
Figure 41.
ROC curve on general recidivism for the custody CPOs.



Diagonal segments are produced by ties.

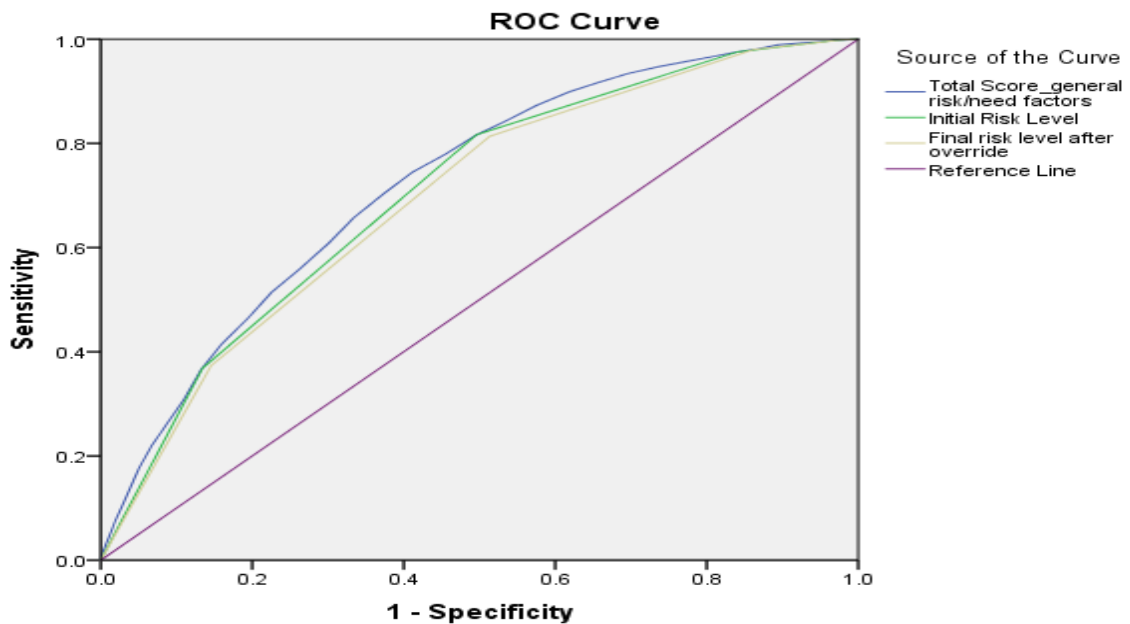
Note: ROC = Receiver Operator Characteristic. CPO = Child Pornography Offender.

Figure 42.
ROC curve on general recidivism for the custody SOs.



Note: ROC = Receiver Operator Characteristic. SO = Sexual Offender.

Figure 43.
ROC curve on general recidivism for the custody NSOs.



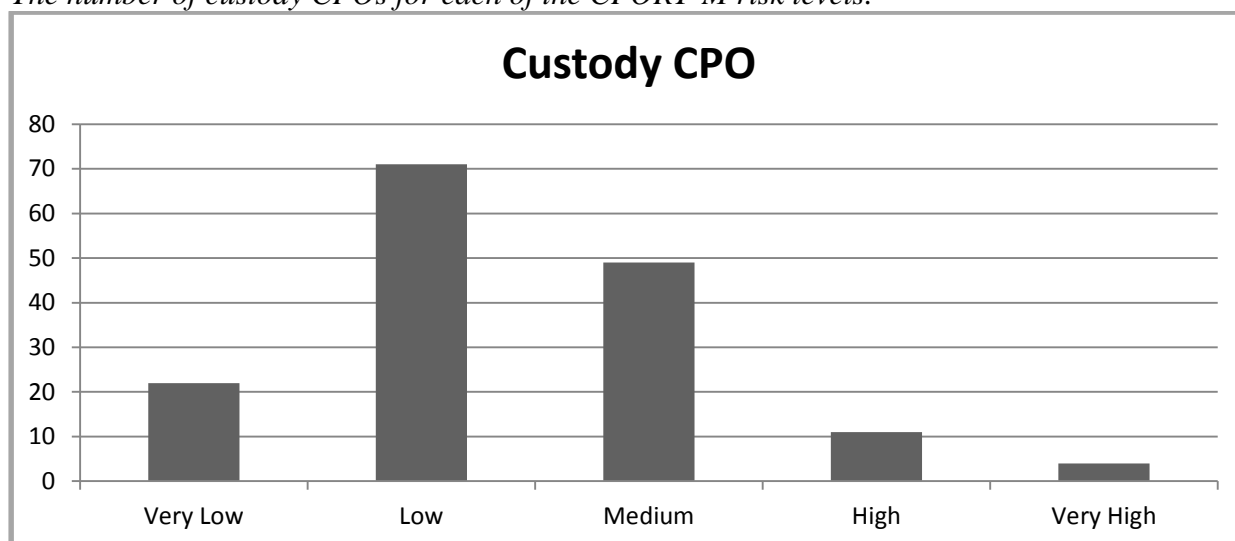
Note: ROC = Receiver Operator Characteristic. NSO = Non-sexual Offender.

CPORT-M Items, Total Score, and Risk Levels

To reiterate, the five items used in the CPORT-M were age, prior criminal history, any contact sexual offending, any failure on conditional release, and any indication and/or admission of pedophilic or hebephilic sexual interests and these items were summed together to create five risk levels (very low, low, medium, high, and very high). A total of 53 (33.8%) custody CPOs were rated as high risk on offender age; otherwise, were 35 years of age and younger. In addition, a total of 122 (77.7%) custody CPOs had a prior criminal history and 16 (10.2%) custody CPOs had prior contact sexual offences. As well, nine (5.7%) custody CPOs were previously unsuccessful on conditional release and 18 (11.5%) were found to have pedophilic or hebephilic sexual interests. A total of 22 (14%) custody CPOs were very low risk on the CPORT-M, 71 (45.2%) were low risk, 49 (31.2%) were medium risk, 11 (7%) were high risk, and four (2.5%) were very high risk. As illustrated in Figure 44, the majority of the custody CPOs were low risk offenders.

Figure 44.

The number of custody CPOs for each of the CPORT-M risk levels.



Note: CPORT-M = Child Pornography Offender Risk Tool – Modified. CPO = Child Pornography Offender.

Correlations between CPORT-M and Recidivism Variables

The correlations between the CPORT-M and CP, sexual, violent, and general recidivism were examined for the custody CPOs to assess the applicability of the CPORT-M to this group of offenders. It is important to note that although correlations were conducted for all four

recidivism variables, the results must be taken with caution for CP and sexual recidivism due to the low base rates (i.e., below 10%). These correlations were calculated for the five items of the CPORT-M and the CPORT-M total score. Most of the correlations for general recidivism among the custody CPOs were significant, with the exception of offender age and pedophilic or hebephilic sexual interests (Table 51). However, the CPORT-M total score was most strongly related to general recidivism. There were no significant correlations for CP and violent recidivism among the custody CPOs. When examining the correlations for sexual recidivism among the custody CPOs, the only significant association was found with any failure on conditional release.

Table 51.

Correlations between CPORT-M variables with recidivism variables for custody CPOs

CPORT-M Variables	Types of Recidivism			
	CP (n=157)	Sexual (n=157)	Violent (n=157)	General (n=157)
CPORT-M Total Score	.110	.123	-.035	.305**
Offender Age	.141	.101	-.057	.098
Prior Criminal History	.087	.097	.043	.187*
Any Contact Sexual Offences	-.054	-.061	-.027	.221**
Any Failure on Conditional Release	.134	.267**	-.020	.267**
Pedophilic/Hebephilic Interests	-.058	-.065	-.029	.068

Note: CPORT-M = Child Pornography Offender Risk Tool – Modified. CP = Child Pornography. CPO = Child Pornography Offender.

**Correlation is significant at the .01 level (2-tailed)

* Correlation is significant at the .05 level (2-tailed)

ROC Coefficients for CPORT-M Total Risk Score with Recidivism Variables

A series of ROC analyses were conducted to examine the CPORT-M total score with CP, sexual, violent, and general recidivism for the custody CPOs. The AUC values for the custody CPO groups for the four recidivism variables are presented in Table 52. An analysis of the CPORT-M total score on CP recidivism produced a ROC of $AUC = .706$ for the custody CPOs, indicating that the CPORT-M total score was not able to predict CP recidivism for the CPO custody sample. In contrast, an analysis of the CPORT-M total score on sexual recidivism produced a ROC of $AUC = .717$ for the custody CPOs, revealing that the CPORT-M total score was able to predict sexual recidivism with a high predictive accuracy. Likewise, the CPORT-M total risk score was able to predict general recidivism with a high predictive accuracy for the

CPO custody sample ($AUC = .734$). Lastly, the CPORT-M total score was not able to predict violent recidivism for the CPO custody sample ($AUC = .365$). Overall, the CPORT-M had the highest predictive accuracy for general recidivism, followed by sexual recidivism. Figures 45 to 48 illustrate the ROC curves for the CPO custody groups.

Table 52.

AUC values for the custody CPOs on recidivism variables

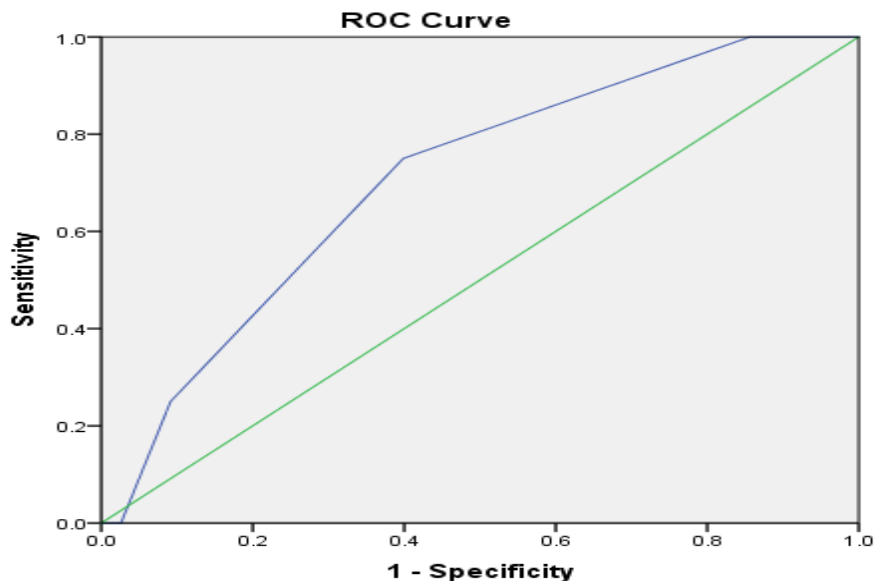
CPORT-M Variable	Types of Recidivism			
	CP	Sexual	Violent	General
	<i>AUC (95%CI)</i>	<i>AUC (95%CI)</i>	<i>AUC (95%CI)</i>	<i>AUC (95%CI)</i>
CPORT-M Total Score	.706 (.478, .933)	.717 (.529, .905)	.365 (.101, .629)	.734 (.608, .861)

Note: AUC = Area under the Curve. CPORT-M = Child Pornography Offender Risk Tool – Modified. CP = Child Pornography. CPO = Child Pornography Offender.

Figure 45.

ROC curve on CP recidivism for the custody CPOs.

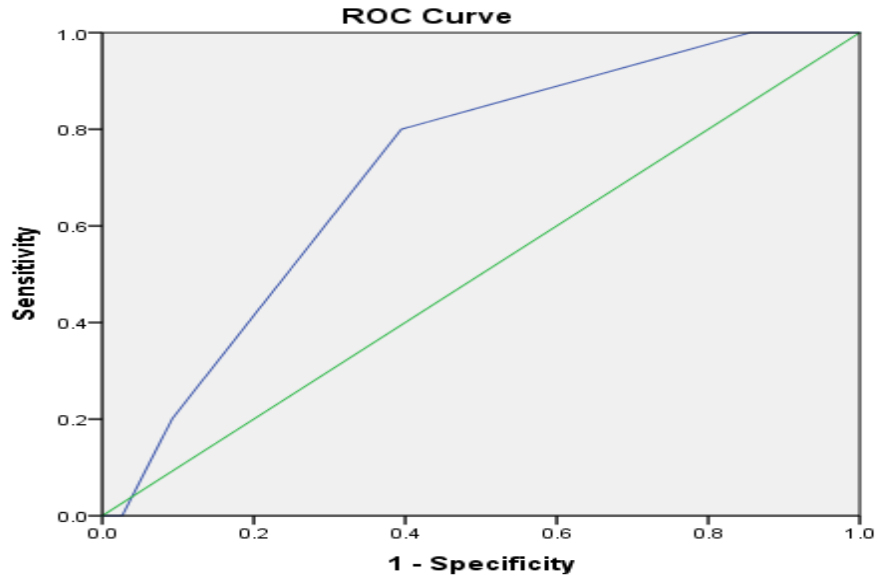
153



Diagonal segments are produced by ties.

Note: ROC = Receiver Operator Characteristic. CP = Child Pornography. CPO = Child Pornography Offender.

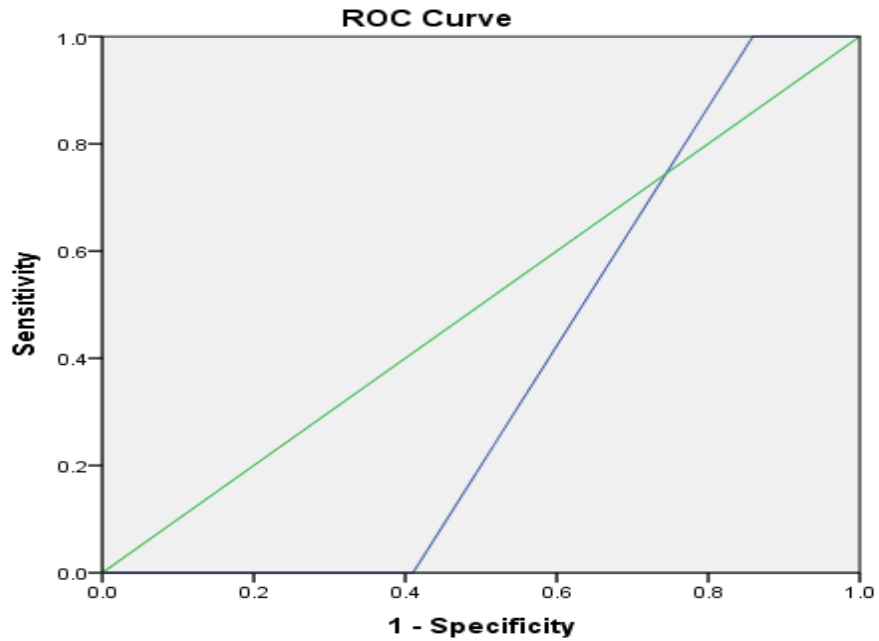
Figure 46.
ROC curve on sexual recidivism for the custody CPOs.



Diagonal segments are produced by ties.

Note: ROC = Receiver Operator Characteristic. CPO = Child Pornography Offender.

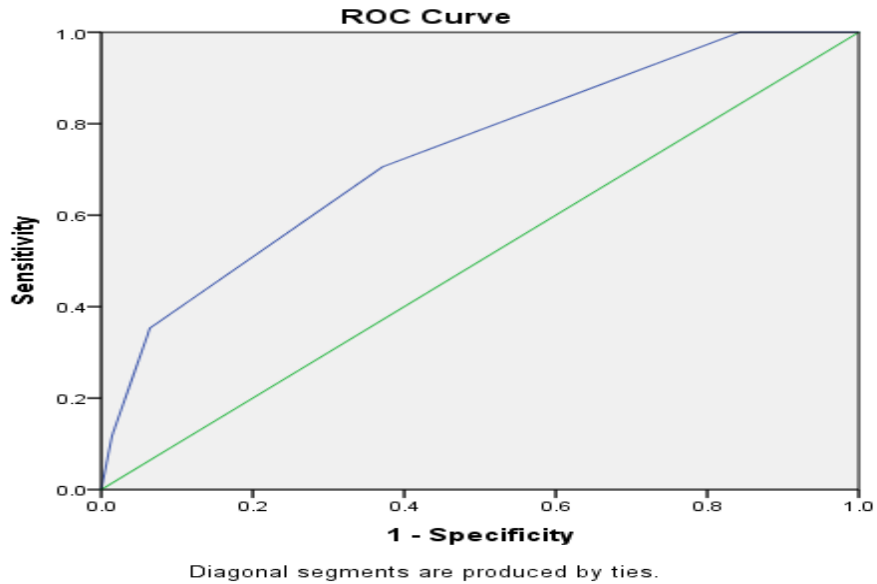
Figure 47.
ROC curve on violent recidivism for the custody CPOs.



Diagonal segments are produced by ties.

Note: ROC = Receiver Operator Characteristic. CPO = Child Pornography Offender.

Figure 48.
ROC curve on general recidivism for the custody CPOs.



Note: ROC = Receiver Operator Characteristic. CPO = Child Pornography Offender.

LSI-OR and CPORT-M – Summary and Convergent Validity

To assess the predictive accuracies of both the LSI-OR and the CPORT-M on the various types of recidivism, for custody CPOs, a summary table is provided below, as well a discussion of the convergent validity between the two risk assessment tools. The summary table of the correlations and the AUC values between the CPORT-M and the LSI-OR with the recidivism variables for the CPO custody group is provided in Table 53. Only the CPORT-M total score was significantly associated with general recidivism for the CPO custody sample. When examining the predictive validity of the tools, the LSI-OR total score and the final risk level both had high predictive accuracy of violent recidivism for the CPO custody sample. As well, the CPORT-M total score was predictive of sexual and general recidivism for the custody CPO sample.

Table 53.

Correlations and AUC values for the LSI-OR and CPORT-M variables with recidivism variables for custody CPOs

	Types of Recidivism			
	CP (n=157)	Sexual (n=157)	Violent (n=157)	General (n=157)
Correlations:				
General Risk/Needs	-.053	-.030	.089	.126
Initial Risk Level	-.020	-.001	.038	.066
Final Risk Level	-.096	-.099	.131	.062
CPORT-M Total Score	.110	.123	-.035	.305**
AUC Values (95% CI):				
General Risk/Needs	.331 (.000, .677)	.414 (.101, .728)	.862 (.805, .919)	.597 (.443, .751)
Initial Risk Level	.433 (.132, .734)	.482 (.222, .742)	.673 (.437, .909)	.558 (.419, .697)
Final Risk Level	.326 (.073, .579)	.335 (.126, .544)	.936 (.854, 1.00)	.552 (.407, .697)
CPORT-M Risk	.706 (.478, .933)	.717 (.529, .905)	.365 (.101, .629)	.734 (.608, .861)

Note: AUC = Area under the Curve. CPORT-M = Child Pornography Offender Risk Tool – Modified. LSI-OR = Level of Service Inventory – Ontario Revision. CP = Child Pornography. CPO = Child Pornography Offender.

**Correlation is significant at the .01 level (2-tailed)

* Correlation is significant at the .05 level (2-tailed)

Convergent Validity between the LSI-OR and the CPORT-M.

The convergent validity between the LSI-OR variables and the CPORT-M was assessed using correlations to examine if the tools were related for the CPO custody sample. The CPORT-M total score was significantly correlated with the general risk/needs total score ($r = .292, p < .001$) and the initial risk levels ($r = .244, p = .002$).

Appendix E: Analyses for Community Offenders

Child Pornography Offenders (CPOs)

There was total of 122 community CPOs and they were convicted of the following index charges: 26 were charged with ACP, one for CPF, five were charged with CPP, 94 were charged with CPPO, and 11 for CPS. The number of CP charges for which the community CPOs were convicted was as follows: 108 (88.5%) offenders had one charge; 13 (10.7%) had two charges; and one (0.8%) had three charges.

CPO, SO, and NSO Community Samples on Demographic Characteristics, Sexual Offender Variable, and LSI-OR Variables

Descriptive and demographic characteristics were also calculated for the CPO, SO, and NSO community samples (see Table 54). There were a total of 122 community CPOs, 994 community SOs, and 47,169 community NSOs. The three community offender groups significantly differed in age. Tukey post hoc analysis indicated that the mean age of all offenders significantly differed ($p < .001$), with the community NSOs being the youngest (34 years), followed by the community CPOs (37 years) and the community SOs (41 years). Similar to the custody and combined samples, the majority of all offenders in the three community groups were Caucasian. In the CPO community sample, the second ethnic group to be highly represented by the majority of offenders was South Asian, which was different than what was found for the CPO (combined) and CPO custody groups (i.e., Aboriginal). Also, the SO and NSO community groups both had a large representation of Black offenders compared to the CPO community sample. The ethnicity composition of both the SO and NSO community samples were highly similar but quite different from the ethnic composition of the CPO community sample.

The sentence start dates for the CPO community sample ranged from January 15, 2010 to December 28, 2011 and from January 4, 2010 to December 31, 2011 for the SO and NSO community samples. The offence severity level and sentence length differed for the three community offender samples. Post hoc analyses revealed that the differences in the means for the offence severity level was significantly different for all the offender groups ($p = .015$) and the same was found for sentence length ($p < .001$). Otherwise, the CPO and SO community samples had higher index offence severity levels compared to the NSO group, 22 and 23 versus 16,

respectively. Correspondingly, the average sentence length was longer for both the CPO and SO community samples compared to the NSO community sample. Specifically, the average sentence length was 747 days for the CPO community sample, 668 days for the SO community sample, and 466 days for the NSO community sample. Interestingly, the CPO community sample received longer sentence lengths compared to the SO community sample, even though they had lower index offence severity levels.

Compared to the NSO community sample, both of the CPO and SO community samples were significantly more likely to have been flagged for having a current or previous sexual offence. A total of 93.3% of the CPO community sample and 85.6% of the SO community sample were flagged for a current or previous sexual offence. Interestingly, for eight (6.7%) of the community CPOs and 139 (14.4%) of the community SOs, this variable was flagged as not present. As well, 3.5% of the NSO community sample was flagged for having a current or previous sexual offence.

Table 54.

Comparisons of CPO, SO, and NSO community samples on demographic characteristics

Demographic Characteristics	CPO Community (n=122) Mean (SD) or n (%)	SO Community (n=994) Mean (SD) or n (%)	NSO Community (n=47169) Mean (SD) or n (%)	ANOVA or Chi Square
Age:	37.38 ^a (14.00)	41.13 ^b (15.64)	33.98 ^c (12.21)	$F(2, 48281) = 168.90, p < .001$
Race:				$\chi^2(20) = 39.49, = p = .006$
Aboriginal	3 (2.7%)	58 (6.7%)	3005 (7.1%)	
Black	1 (0.9%)	66 (7.6%)	3842 (9.1%)	
Caucasian	100 (89.3%)	620 (71.7%)	29540 (69.6%)	
Declined to Specify	1 (0.9%)	3 (0.3%)	171 (0.4%)	
East Asian	1 (0.9%)	19 (2.2%)	919 (2.2%)	
Hispanic	2 (1.8%)	18 (2.1%)	650 (1.5%)	
Other Minority	--	19 (2.2%)	1157 (2.7%)	
South Asian	4 (3.6%)	40 (4.6%)	1494 (3.5%)	
Southeast Asian	--	7 (0.8%)	605 (1.4%)	
Unknown	--	6 (0.7%)	302 (0.7%)	

West Asian/Arabic	--	9 (1.0%)	759 (1.8%)	
Most Serious Offence (MSO) Severity Level	22 ^a (.26)	23 ^b (1.00)	16 ^c (4.06)	$F(2, 48282) = 1798.72, p < .001$
Sentence Length	746.98 ^a (287.35)	667.66 ^b (266.85)	466.07 ^c (199.11)	$F(2, 48282) = 604.97, p < .001$
Current/previous Sexual Offence(s)	112 (93.3%)	828 (85.6%)	1503 (3.5%)	$\chi^2(2) = 13897.47, p < .001$

Note: CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender. ^{a,b,c} = Different lettered superscripts indicated that the Tukey post hoc test differences of the means were significant at $p < .05$; whereas, same lettered superscripts indicated that the differences of the means were not significant.

The three community offender samples significantly differed on most of the LSI-OR summary measures, with the exception of the antisocial patterns subscale and the strength scores for: general risk/needs scale, education/employment, family/marital, leisure/recreation, and companions. Tukey post hoc analyses were conducted on the significant variables and the results are presented for each measure below. Refer to Table 55 and Figure 49 for the means and standard deviations for all offender groups on the LSI-OR measures.

The general risk/needs mean score was significantly different for all community offender groups; the CPO community sample mean score was significantly lower compared to both the SO ($p = .002$) and NSO community samples ($p < .001$). The initial risk levels ($p = .002$) and the risk override scores ($p < .001$) were significantly different between the three community offender groups. The CPO community sample scored significantly higher on the measure of risk override, indicating that the use of the override feature to increase their risk level occurred more often than it did for the SO and the NSO community samples. However, for the final risk level, the only significant differences in the means were found between the SO and NSO community samples ($p < .001$).

All offender groups were significantly different from each other on the criminal history subscale ($p < .005$). For the strength score of criminal history, the only significant differences of the means were found between the CPO and SO community samples ($p = .024$). As well, the

only significant differences of the means for the education/employment subscale was between the NSO community sample and both the CPO ($p = .001$) and SO community samples ($p < .001$). For the family/marital subscale, the significant differences were found between the CPO community sample and both the SO ($p = .038$) and NSO ($p = .050$) community groups. The significant differences found for the leisure/recreation subscale was between the SO and NSO community samples ($p < .001$).

The companions ($p = .023$) and substance abuse subscales ($p = .004$) and the strength score for substance abuse ($p = .002$) were significantly different for all three community offender groups. For the procriminal attitude/orientation subscale, the significant differences were found among the SO community sample and both the CPO ($p = .014$) and NSO ($p < .001$) community samples. Also, the significant differences that were found for the strength score of the procriminal attitude/orientation subscale was between the NSO community sample and the SO community sample ($p = .002$). Lastly, for the strength score of the antisocial pattern subscale, the only significant differences found were between the SO and the NSO community samples ($p = .028$).

Table 55.

Comparisons of CPO, SO, and NSO community samples on LSI-OR variables

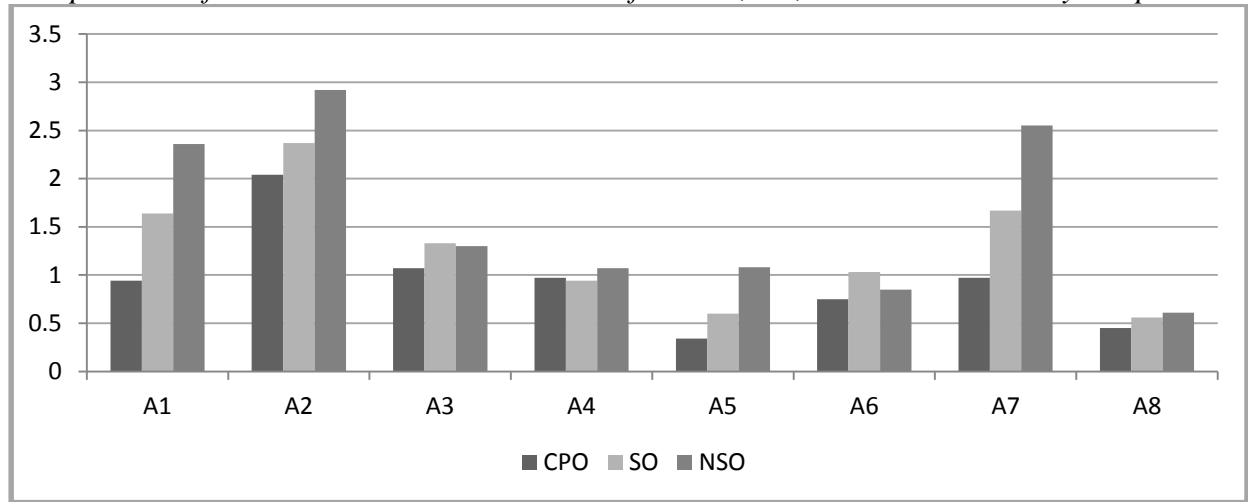
LSI-OR Variables	CPO Community ($n=122$) Mean (SD)	SO Community ($n=994$) Mean (SD)	NSO Community ($n=47169$) Mean (SD)	ANOVA
General Risk/Needs	7.53 ^a (5.11)	10.13 ^b (7.40)	12.74 ^c (8.05)	$F(2, 48282) = 76.27, p < .001$
Strength	1.18 (1.83)	.90 (1.45)	.92 (1.52)	$F(2, 48282) = 1.93, p = .145$
Initial Risk Level	1.95 ^a (.78)	2.30 ^b (1.02)	2.63 ^c (1.05)	$F(2, 48282) = 72.98, p < .001$
Risk Override	2.17 ^a (1.89)	1.67 ^b (1.87)	.49 ^c (1.18)	$F(2, 48282) = 576.79, p < .001$
Final Risk Level (after override)	2.99 ^a (1.12)	3.04 ^b (1.09)	2.80 ^a (1.01)	$F(2, 48282) = 28.80, p < .001$
A1: Criminal History	.94 ^a (1.21)	1.64 ^b (2.07)	2.36 ^c (2.34)	$F(2, 48282) = 68.70, p < .001$
A1: Strength	.22 ^a (.42)	.13 ^b (.34)	.15 ^b (.36)	$F(2, 48282) = 3.70, p = .025$
A2: Education/ Employment	2.04 ^a (2.24)	2.37 ^a (2.49)	2.92 ^b (2.66)	$F(2, 48282) = 27.75, p < .001$

A2: Strength	.20 (.41)	.24 (.43)	.22 (.41)	$F(2, 48282) = 1.20, p = .303$
A3: Family/Marital	1.07 ^a (1.02)	1.33 ^b (1.07)	1.30 ^b (1.08)	$F(2, 48282) = 3.01, p = .049$
A3: Strength	.22 (.42)	.15 (.36)	.17 (.38)	$F(2, 48282) = 2.45, p = .086$
A4: Leisure/ Recreation	.97 ^a (.76)	.94 ^a (.76)	1.07 ^b (.74)	$F(2, 48282) = 15.42, p < .001$
A4: Strength	.03 (.18)	.06 (.25)	.06 (.25)	$F(2, 48282) = 1.03, p = .358$
A5: Companions	.34 ^a (.69)	.60 ^b (.86)	1.08 ^c (1.03)	$F(2, 48282) = 134.25, p < .001$
A5: Strength	.13 (.34)	.09 (.28)	.08 (.27)	$F(2, 48282) = 2.71, p = .067$
A6: Procriminal Attitude/Orientation	.75 ^a (.91)	1.03 ^b (1.07)	.85 ^a (1.07)	$F(2, 48282) = 14.78, p < .001$
A6: Strength	.09 ^a (.29)	.07 ^b (.25)	.10 ^a (.30)	$F(2, 48282) = 5.96, p = .003$
A7: Substance Abuse	.97 ^a (1.57)	1.67 ^b (2.14)	2.55 ^c (2.31)	$F(2, 48282) = 100.28, p < .001$
A7: Strength	.23 ^a (.42)	.13 ^b (.34)	.10 ^c (.29)	$F(2, 48282) = 19.58, p < .001$
A8: Antisocial Pattern	.45 (.67)	.56 (.75)	.61 (.83)	$F(2, 48282) = 3.96, p = .019$
A8: Strength	.05 ^a (.22)	.03 ^b (.16)	.04 ^a (.20)	$F(2, 48282) = 3.38, p = .034$

Note: LSI-OR = Level of Service Inventory – Ontario Revision. CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender. ^{a,b,c} = Different lettered superscripts indicated that the Tukey post hoc test differences of the means were significant at $p < .05$; whereas, same lettered superscripts indicated that the differences of the means were not significant.

Figure 49.

Comparisons of the means on LSI-OR variables for CPO, SO, and NSO community samples.



Note: LSI-OR = Level of Service Inventory – Ontario Revision. CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

The means and standard deviations for the remaining LSI-OR variables, including the specific risk/need factors, institutional factors, other client issues, and special responsivity considerations, were also calculated for the CPO, SO, and NSO community samples (Table 56). The community offenders groups significantly differed on all variables; therefore, post hoc analyses were conducted for all of the variables. The results indicated that the differences in the means on the personal problems of criminogenic potential of the SO community sample significantly differed from both the CPO ($p < .001$) and NSO ($p < .001$) community samples. With respect to the history of perpetration scores, the differences in the means were significantly different for the CPO community sample and both the SO ($p < .001$) and NSO ($p < .001$) community samples. In addition, for the institutional factors subscale, the NSO community sample significantly differed from both the CPO ($p = .006$) and the SO community samples ($p < .001$). When examining the results for the social, health, and mental health subscale, the significant differences of means was found between the NSO and SO community samples ($p < .001$). Lastly, the significant differences of the means for the special responsivity considerations were found between the SO community sample and both the CPO ($p = .014$) and NSO community samples ($p < .001$).

Table 56.

Comparisons of CPO, SO, and NSO community samples on LSI-OR variables

LSI-OR Variables	CPO Community (<i>n</i> =122) Mean (<i>SD</i>)	SO Community (<i>n</i> =994) Mean (<i>SD</i>)	NSO Community (<i>n</i> =47169) Mean (<i>SD</i>)	ANOVA
Specific Risk/Needs:				
B1: Personal Problems with Criminogenic Potential	1.53 ^a (1.10)	2.12 ^b (1.60)	1.64 ^a (1.46)	$F(2, 48282) = 53.27, p < .001$
B2: History of Perpetration	.16 ^a (.45)	.92 ^b (1.02)	.91 ^b (1.06)	$F(2, 48282) = 30.71, p < .001$
C: Prison Experience: Institutional Factors	.32 ^a (.56)	.29 ^a (.66)	.17 ^b (.53)	$F(2, 48282) = 26.98, p < .001$
Other Client Issues:				
F1: Social, Health, and Mental Health	1.94 ^a (1.81)	1.96 ^a (2.00)	1.64 ^b (1.93)	$F(2, 48282) = 15.13, p < .001$
F2: Barrier to Release	--	--	--	
G: Special Responsivity Considerations	.97 ^a (.83)	1.2 ^b (.99)	.88 ^a (.92)	$F(2, 48282) = 65.89, p < .001$

Note: LSI-OR = Level of Service Inventory – Ontario Revision. CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender. ^{a,b,c} = Different lettered superscripts indicated that the Tukey post hoc test differences of the means are significant at $p < .05$; whereas, same lettered superscripts indicated that the differences of the means were not significant.

Recidivism Variables for the CPO, SO, and NSO Community Samples

CP Recidivism.

Of the total sample, 12 (0.02%) community offenders received a new CP index offence (see Table 57). Three (2.5%) of the community CPOs recidivated and they all received one new CP charge. Conversely, two (0.2%) community SOs recidivated and all received one CP charge. A total of seven (0.01%) community NSOs recidivated wherein five received one new CP charge, one acquired two new CP charges, and one incurred three new CP charges. Overall, the community CPOs had higher rates of CP recidivism (2.5%) compared to the SO (0.2%) and NSO (0.01%) community samples, $\chi^2(2) = 305.28, p < .001$.

Table 57.

Comparisons of CPO, SO, and NSO community samples on CP recidivism

CP Recidivism	CPO Community	SO Community	NSO Community	Total
No Recontact:				
Count	119	992	47162	48273
% of Total	97.54%	99.80%	99.99%	99.98%
Recontact:				
Count	3	2	7	12
% of Total	2.46%	0.20%	0.01%	0.02%
Total:				
Count	122	994	47169	48285
% of Total	100%	100%	100%	100%

Note: CP = Child Pornography. CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

The community offender groups significantly differed on only the CPPO and CPS recontact offences and the recontact total variable; therefore, post hoc analyses were conducted for these significant variables. The results indicated that the differences in the means on the CPPO recontact variable for the community CPOs significantly differed from both the SO ($p < .001$) and NSO ($p < .001$) community samples. When examining the CPS recontact variable, the differences in the means were significant only for the SO and NSO community samples ($p < .001$). The differences in the means for the recontact total variable was significantly different for all three community offender groups ($p = .027$). Overall, the CPO community group had significantly more CP recontact charges than the SO and NSO community groups (see Table 58).

Table 58.

The number of CPO, SO, and NSO community samples by type and number of CP recidivism offences

Type of CP Recontact Offences	Number of Offenders Charged with Recontact Offences			ANOVA Between CP Recontact Offences by Offender Group
	CPO Community (n)	SO Community (n)	NSO Community (n)	
Accessing CP:	--	--	2	$F(2, 48282) = .02,$ $p = .977$
CP: Film/video charges:	--	--	--	
Publishing CP:	--	--	1	$F(2, 48282) = .01,$ $p = .988$

Possessing CP:	3 ^a	1 ^b	5 ^b	$F(2, 48282) = 199.16,$ $p < .001$
CP: Sell/distribute charges:	-- ^a	1 ^b	2 ^a	$F(2, 48282) = 7.28,$ $p = .001$
Recontact Total CP Offences	3 ^a	2 ^b	7 ^c	$F(2, 48282) = 79.26,$ $p < .001$

Note: CP = Child Pornography. CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender. ^{a,b,c} = Different lettered superscripts indicated that the Tukey post hoc test differences of the means were significant at $p < .05$; whereas, same lettered superscripts indicated that the differences of the means were not significant.

Other Recidivism Variables.

The three recidivism variables, sexual, violent, and general recidivism were analyzed by the type of offender group for the community offenders (see Tables 59 to 61). Among the community offenders captured in the total sample, the sexual recidivism rate was 0.3%, while the violent recidivism rate was 7.4%, and the general recidivism rate was 24.3%.

Table 59.

Comparisons of CPO, SO, and NSO community samples on sexual recidivism

Sexual Recidivism	CPO Community	SO Community	NSO Community	Total
No Recontact:				
Count	119	964	47060	48143
% of Total	97.54%	96.98%	99.77%	99.71%
Recontact:				
Count	3	30	109	142
% of Total	2.46%	3.02%	0.23%	0.29%
Total:				
Count	122	994	47169	48285
% of Total	100%	100%	100%	100%

Note: CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

Table 60.

Comparisons of CPO, SO, and NSO community samples on violent recidivism

Violent Recidivism	CPO Community	SO Community	NSO Community	Total
No Recontact:				
Count	120	956	43653	44729
% of Total	98.36%	96.18%	92.55%	92.64%
Recontact:				
Count	2	38	3516	3556
% of Total	1.64%	3.82%	7.45%	7.36%

Total:				
Count	122	994	47169	48285
% of Total	100%	100%	100%	100%

Note: CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

Table 61.

Comparisons of CPO, SO, and NSO community samples on general recidivism

General Recidivism	CPO Community	SO Community	NSO Community	Total
No Recontact:				
Count	114	879	35539	36532
% of Total	93.44%	88.43%	75.34%	75.66%
Recontact:				
Count	8	115	11630	11753
% of Total	6.56%	11.57%	24.66%	24.34%
Total:				
Count	122	994	47169	48285
% of Total	100%	100%	100%	100%

Note: CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

The community SOs had the highest sexual recidivism rate compared to the CPO and NSO community samples, 3% compared to 2.5% and 0.2%, respectively (see Table 62). While the community NSOs had the highest violent recidivism rate compared to the CPO and SO community samples, 7.5% compared to 1.6% and 3.8%. Likewise, the community NSOs had a higher rate of general recidivism (24.7%) compared to the CPO (6.6%) and SO (11.6%) community samples. The average lapse time was not significantly different for the three offender groups but the community CPOs recidivated slightly quicker. The offence severity levels were significantly different for the three community offender groups. The post hoc analysis conducted revealed that the difference in means for the offence severity level was significantly different between the community SOs and NSOs ($p = .002$). Interestingly, community CPOs received shorter sentence lengths compared to the SO and NSO community samples, even though they had the highest offence severity level.

Table 62.

Comparisons of CPO, SO, and NSO community samples on recidivism variables

Recidivism Variables	CPO Community (<i>n</i> =122) Mean (<i>SD</i>) or <i>n</i> (%)	SO Community (<i>n</i> =994) Mean (<i>SD</i>) or <i>n</i> (%)	NSO Community (<i>n</i> =47169) Mean (<i>SD</i>) or <i>n</i> (%)	ANOVA and Chi Squares
Sexual Recidivism	3 (2.5%)	30 (3.0%)	109 (0.2%)	$\chi^2(2) = 277.43, p < .001$
Violent Recidivism	2 (1.6%)	38 (3.8%)	3516 (7.5%)	$\chi^2(2) = 24.69, p < .001$
General Recidivism	8 (6.6%)	115 (11.6%)	11630 (24.7%)	$\chi^2(2) = 111.53, p < .001$
Lapse Time	293.63 ^a (186.30)	344.24 ^a (193.42)	335.35 ^b (186.92)	$F(2, 11750) = 0.33, p = .720$
New Most Serious Offence (MSO) Severity Level	17 ^a (6)	16 ^a (5)	15 ^b (5)	$F(2, 11750) = 6.61, p = .001$
Sentence Length	173.00 (256.17)	233.18 (339.08)	212.51 (256.95)	$F(2, 11750) = .461, p = .631$
New Sentence Type:				
Custody	3 (37.5%)	68 (59.1%)	5705 (49.1%)	$\chi^2(4) = 10.31, p = .036$
Probation	3 (37.5%)	44 (38.3%)	5074 (43.6%)	
Conditional Sentence	2 (25%)	3 (2.6%)	851 (7.3%)	

Note: CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender. ^{a,b,c} = Different lettered superscripts indicated that the Tukey post hoc test differences of the means were significant at $p < .05$; whereas, same lettered superscripts indicated that the differences of the means were not significant.

Use of the Override

CPO, SO, and NSO Community Samples.

An analysis of the initial risk level and the resulting final risk level, after accounting for the use of the override, was conducted for the CPO, SO, and NSO community groups, using chi square tests. It was found that the override feature was used with a total of 7,772 community offenders: 71 (58.2%) community CPOs, 453 (45.6%) community SOs, and 7,248 (15.4%) community NSOs. The use of the override feature to increase or decrease an offender's risk level was significantly different between the three community offender groups, $F(2, 48282) = 576.79, p < .001$. Post hoc analysis using Tukey was conducted and found that the use of the

override feature was significantly different between all offender groups ($p < .001$). These results for the difference between the initial and final risk level were significant for the community CPOs ($\chi^2(16) = 110.33, p < .001$). A common pattern of significant results were found between the initial and final risk level for the community SOs ($\chi^2(16) = 1290.00, p < .001$) and the community NSOs ($\chi^2(16) = 135344.26, p < .001$). The contingency tables which display the frequency distribution of these variables for these analyses are displayed in Tables 63 to 65.

Table 63.

Initial risk level by final risk level for community CPOs

Initial Risk Level	Final Risk After Override					Total
	Very Low	Low	Medium	High	Very High	
Very Low						
Count	15	0	9	10	0	34
% of Total	44.1%	0.0%	26.5%	29.4%	0.0%	27.9%
Low						
Count	0	27	13	25	0	65
% of Total	0.0%	41.5%	20%	38.5%	0.0%	53.3%
Medium						
Count	0	0	6	10	3	19
% of Total	0.0%	0.0%	31.6%	52.6%	15.8%	15.6%
High						
Count	0	0	0	3	0	3
% of Total	0.0%	0.0%	0.0%	100%	0.0%	2.5%
Very High						
Count	0	0	0	0	1	1
% of Total	0.0%	0.0%	0.0%	0.0%	100%	0.8%
Total						
Count	15	27	28	48	4	122
% of Total	12.3%	22.1%	23.0%	39.3%	3.3%	100%

Note. CPO = Child Pornography Offender. Cell percentages are the percentage of the initial risk levels (rows), while total percentages are the percentage of all of the offenders.

Table 64.

Initial risk level by final risk level for community SOs

Initial Risk Level	Final Risk After Override					Total
	Very Low	Low	Medium	High	Very High	
Very Low						
Count	116	16	51	57	1	241
% of Total	48.1%	6.6%	21.2%	23.7%	0.4%	24.2%
Low						
Count	0	165	90	101	7	363

% of Total	0.0%	45.5%	24.8%	27.8%	1.9%	36.5%
Medium						
Count	0	1	144	112	8	265
% of Total	0.0%	0.4%	54.3%	42.3%	3.0%	26.7%
High						
Count	0	0	0	97	6	103
% of Total	0.0%	0.0%	0.0%	94.2%	5.8%	10.4%
Very High						
Count	0	0	0	0	22	22
% of Total	0.0%	0.0%	0.0%	0.0%	100%	2.2%
Total						
Count	116	182	285	367	44	994
% of Total	11.7%	18.3%	28.7%	36.9%	4.4%	100%

Note. SO = Sexual Offender. Cell percentages are the percentage of the initial risk levels (rows), while total percentages are the percentage of all of the offenders.

Table 65.

Initial risk level by final risk level for community NSOs

Initial Risk Level	Final Risk After Override					Total
	Very Low	Low	Medium	High	Very High	
Very Low						
Count	5712	334	1388	67	5	7506
% of Total	76.1%	4.4%	18.5%	0.9%	0.1%	15.9%
Low						
Count	7	10054	3403	246	8	13718
% of Total	0.1%	73.3%	24.8%	1.7%	0.1%	29.1%
Medium						
Count	6	81	15189	1190	59	16525
% of Total	0.04%	0.48%	91.92%	7.2%	0.36%	35.0%
High						
Count	0	5	169	7411	169	7754
% of Total	0.0%	0.06%	2.17%	95.6%	2.17%	16.4%
Very High						
Count	0	0	13	22	1631	1666
% of Total	0.0%	0.0%	0.78%	1.32%	97.9%	3.5%
Total						
Count	5725	10474	20162	8936	1872	47169
% of Total	12.1%	22.2%	42.7%	18.9%	4.0%	100%

Note. NSO = Non-sexual Offender. Cell percentages are the percentage of the initial risk levels (rows), while total percentages are the percentage of all of the offenders.

Correlations between LSI-OR and Recidivism Variables

CPO, SO, and NSO Community Samples.

The correlations between various aspects of the LSI-OR and CP, sexual, violent, and general recidivism were also examined for the CPO, SO, and NSO community groups to assess the applicability of the LSI-OR to the different offender populations. It is important to note that although correlations were conducted for all four recidivism variables, the results must be taken with caution for CP and sexual recidivism due to the low base rates (i.e., below 10%). These correlations were calculated for the: general risk/need total score, total strength score, initial risk level, final risk level after the override use, the eight domain scores, two subscales from the specific risk/need factors section, institutional factors, two subscales from the other client issues section, and special responsivity considerations.

When examining the correlations for CP recidivism among the community offender groups, none of correlations were significant, with the exception of procriminal attitude/orientation, antisocial pattern, personal problems with criminogenic potential, institutional factors, and social, health, and mental health for the NSO community sample (Table 66). All of the correlations for sexual recidivism among the CPO community sample were not significant. Alternatively, all of the correlations for sexual recidivism among the NSO community sample were significant except for substance abuse. The only correlations for sexual recidivism among the SO community group that were significant were: the general risk/needs score, initial and final risk levels, procriminal attitude/orientation, antisocial pattern, and personal problems with criminogenic potential (Table 67).

Table 66.

Correlations between LSI-OR variables with CP recidivism for CPO, SO, and NSO community samples

	CP Recidivism		
	CPO Community (n=122)	SO Community (n=994)	NSO Community (n = 47169)
General Risk/Needs	-.058	-.004	.003
Strength	-.045	-.012	.000
Initial Risk Level	-.058	-.013	.004
Final Risk Level	-.046	.039	.004
A1: Criminal History	-.124	-.014	.000
A2: Education/ Employment	-.003	.029	-.002

A3: Family/Marital	-.064	-.035	.000
A4: Leisure/ Recreation	-.063	.033	.004
A5: Companions	-.080	.021	.002
A6: Procriminal Attitude/Orientation	.102	-.001	.015**
A7: Substance Abuse	-.030	-.035	-.001
A8: Antisocial Pattern	-.028	-.003	.014**
B1: Personal Problems with Criminogenic Potential	-.029	.011	.018**
B2: History of Perpetration	.060	-.041	-.002
C1: Institutional Factors	.004	-.019	.016**
F1: Social, Health, and Mental Health	-.083	-.022	.012**
G1: Special Responsivity Considerations	.006	-.032	.009*

Note: LSI-OR = Level of Service Inventory – Ontario Revision. CP = Child Pornography. CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

**Correlation is significant at the .01 level (2-tailed)

* Correlation is significant at the .05 level (2-tailed)

Table 67.

Correlations between LSI-OR variables with sexual recidivism for CPO, SO, and NSO community samples

	Sexual Recidivism		
	CPO Community (n=122)	SO Community (n=994)	NSO Community (n = 47169)
General Risk/Needs Strength	-.058	.075*	.023**
Initial Risk Level	-.045	-.036	-.012**
Final Risk Level	-.058	.070*	.022**
A1: Criminal History	-.046	.096**	.031**
A2: Education/ Employment	-.124	.045	.016**
A3: Family/Marital	-.003	.040	.020**
A4: Leisure/ Recreation	-.064	.056	.018**
A5: Companions	-.063	.053	.014**
A6: Procriminal Attitude/Orientation	-.080	.026	.011*
A7: Substance Abuse	.102	.093**	.022**
A8: Antisocial Pattern	-.030	.039	.004
B1: Personal Problems with Criminogenic Potential	-.028	.081*	.020**
B2: History of Perpetration	-.029	.082**	.038**
C1: Institutional Factors	.060	-.004	.014**
	.004	.048	.019**

F1: Social, Health, and Mental Health	-.083	.039	.023**
G1: Special Responsivity Considerations	.006	.033	.024**

Note: LSI-OR = Level of Service Inventory – Ontario Revision. CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

**Correlation is significant at the .01 level (2-tailed)

* Correlation is significant at the .05 level (2-tailed)

When examining violent recidivism, the only correlations that were significant among the community CPOs included the family/marital subscale and personal problems with criminogenic potential. However, most of the correlations for violent recidivism among the SO and NSO community groups were significant (Table 68). Lastly, all of the correlations for general recidivism among the SO and NSO community samples were significant except for the total strength score for the SO community sample. Very few LSI-OR variables (i.e., general risk/needs, initial risk level, criminal history, personal problems with criminogenic potential, and history of perpetration) were significantly correlated with general recidivism among the CPO community group (Table 69). Overall, the general risk/needs score was correlated with general recidivism among the offender groups; however, it was not correlated as strongly for the CPO and SO community samples as it was for the NSO community sample.

Table 68.

Correlations between LSI-OR variables with violent recidivism for CPO, SO, and NSO community samples

	Violent Recidivism		
	CPO Community (n=122)	SO Community (n=994)	NSO Community (n = 47169)
General Risk/Needs Strength	.050	.164**	.165**
Initial Risk Level	-.013	-.011	-.039**
Final Risk Level	.008	.163**	.155**
A1: Criminal History	.059	.112**	.152**
A2: Education/ Employment	.006	.126**	.137**
A3: Family/Marital	.027	.095**	.119**
A4: Leisure/ Recreation	.181*	.076*	.100**
A5: Companions	.006	.113**	.080**
A6: Procriminal Attitude/Orientation	.123	.104**	.099**
	-.035	.136**	.090**

A7: Substance Abuse	.003	.095**	.098**
A8: Antisocial Pattern	-.087	.152**	.125**
B1: Personal Problems with Criminogenic Potential	.232*	.152**	.152**
B2: History of Perpetration	.096	.108**	.115**
C1: Institutional Factors	-.073	.080*	.069**
F1: Social, Health, and Mental Health	.004	.030	.098**
G1: Special Responsivity Considerations	.083	.063*	.087**

Note: LSI-OR = Level of Service Inventory – Ontario Revision. CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

**Correlation is significant at the .01 level (2-tailed)

* Correlation is significant at the .05 level (2-tailed)

Table 69.

Correlations between LSI-OR variables with general recidivism for CPO, SO, and NSO community samples

	General Recidivism		
	CPO Community (n=122)	SO Community (n=994)	NSO Community (n = 47169)
General Risk/Needs	.187*	.282**	.354**
Strength	-.081	-.048	-.086**
Initial Risk Level	.187*	.265**	.333**
Final Risk Level	.061	.188**	.309**
A1: Criminal History	.205*	.253**	.289**
A2: Education/ Employment	.129	.166**	.259**
A3: Family/Marital	.111	.101**	.162**
A4: Leisure/ Recreation	.011	.141**	.179**
A5: Companions	.157	.188**	.241**
A6: Procriminal Attitude/Orientation	.038	.197**	.192**
A7: Substance Abuse	.048	.187**	.219**
A8: Antisocial Pattern	.119	.213**	.270**
B1: Personal Problems with Criminogenic Potential	.234**	.206**	.242**
B2: History of Perpetration	.271**	.124**	.170**
C1: Institutional Factors	.026	.143**	.149**
F1: Social, Health, and Mental Health	.027	.069*	.167**

G1: Special Responsivity Considerations	.130	.125**	.149**
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Note: LSI-OR = Level of Service Inventory – Ontario Revision. CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

**Correlation is significant at the .01 level (2-tailed)

* Correlation is significant at the .05 level (2-tailed)

Follow-up Time

The follow-up date for the community offenders was calculated by subtracting the follow-up date (i.e., December 31, 2013) from their LSI-OR assessment date. The follow-up time for all of the community offenders was 1,052 days ($M = 1052.31$; $SD = 216.42$). When examining the offender groups separately, the follow-up time for the community CPOs was 1,006 days ($M = 1005.85$; $SD = 209.17$), 1,042 days ($M = 1041.85$; $SD = 218.08$) for the community SOs, and 1,053 days ($M = 1052.65$; $SD = 216.38$) for the community NSOs. In sum, the community NSOs had the longest follow-up periods in comparison to the CPOs and SOs.

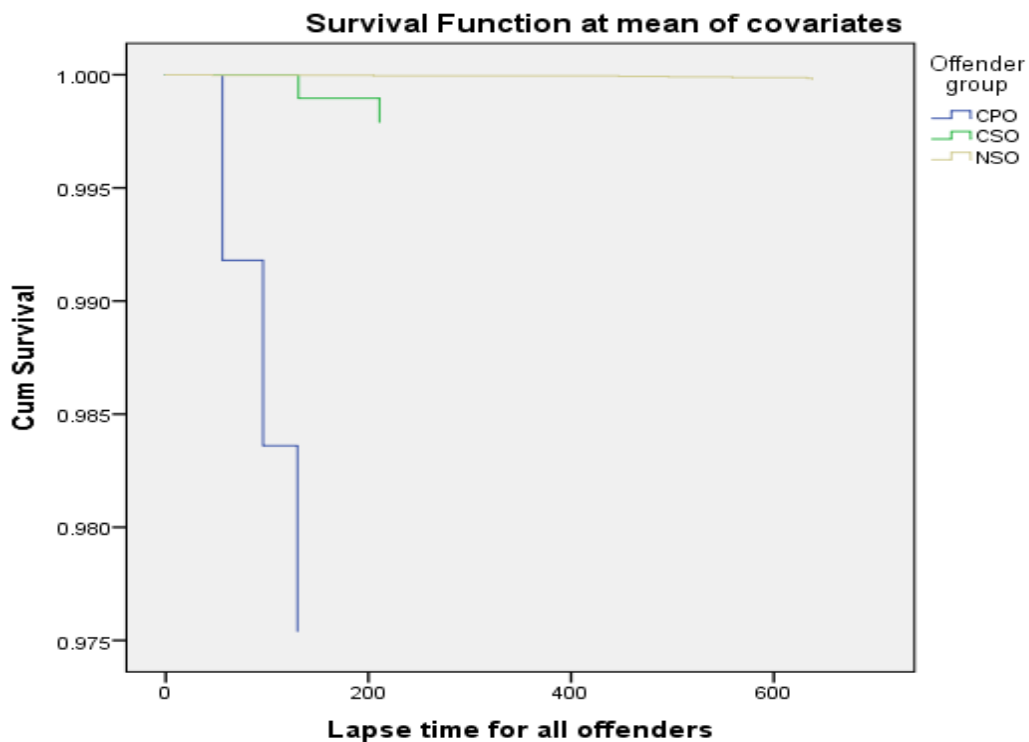
Survival Analysis (Time at Risk)

The mean survival time for the offender groups was analyzed using cox regression survival analysis. A survival time variable was created using four separate equations for the offenders and combining the results from these four into one variable. Specifically, the equations were as follows: an offender’s recidivism date subtracted from the offender’s release date for the custody recidivists; the follow-up date subtracted from an offender’s release date for the custody non-recidivists; an offender’s recidivism date subtracted from their LSI-OR assessment date for the community recidivists; and the follow-up date subtracted from the LSI-OR assessment date for the community non-recidivists. The mean survival time for all of the community offenders was 860 days ($M = 859.84$; $SD = 392.68$). When examining the community offender groups separately, the mean survival time for the community CPOs was 959 days ($M = 959.37$; $SD = 280.72$), 948 days ($M = 948.23$; $SD = 320.47$) for the community SOs, and 858 days ($M = 857.72$; $SD = 394.07$) for the community NSOs. The CPO community sample experienced longer survival in the community compared to both the SO and NSO community samples.

CP, Sexual, Violent, and General Recidivism.

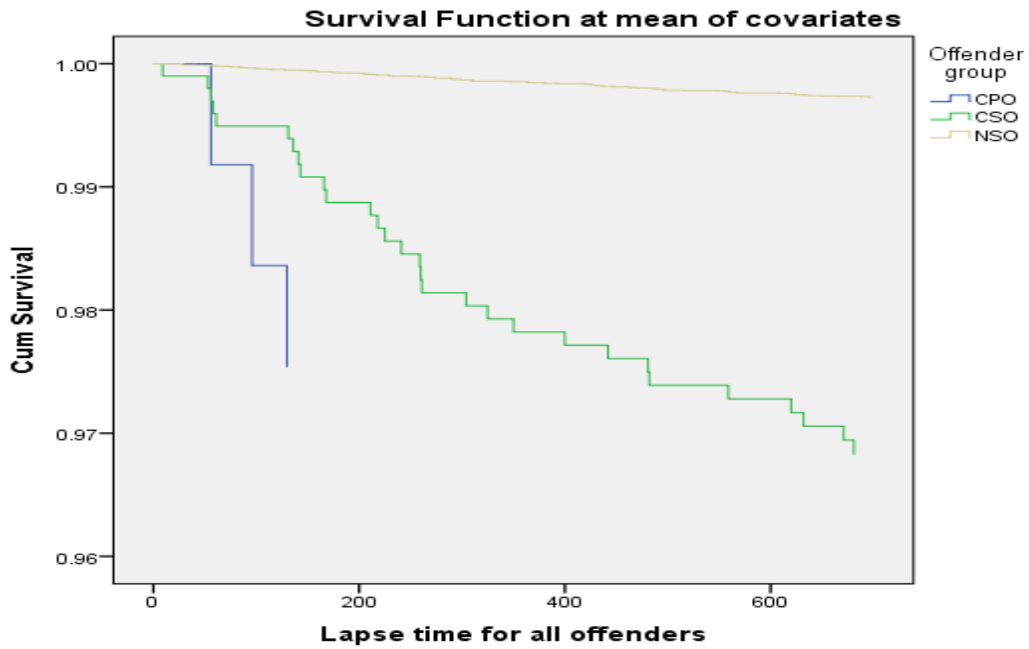
A community offender's time spent on release was calculated for the four recidivism variables using Cox regression/survival analysis. Figure 50 illustrates the survival curves for the three community offender groups for CP recidivism. The SO and NSO community samples had an estimated probability of survival that was greater than for the CPO community sample. When examining sexual recidivism, Figure 51 portrays that the community NSOs had an estimated probability of survival that was greater than the CPO and SO community groups. Alternatively, when investigating violent recidivism, the CPO and SO community groups had an estimated probability of survival that was greater than for the NSO community group (Figure 52). The survival curve for the three offender groups for general recidivism is illustrated in Figure 53. The community CPOs had an estimated probability of survival that was greater than for both the SO and NSO community samples.

Figure 50.
Survival curves for the CPO, SO, and NSO community samples for CP recidivism.



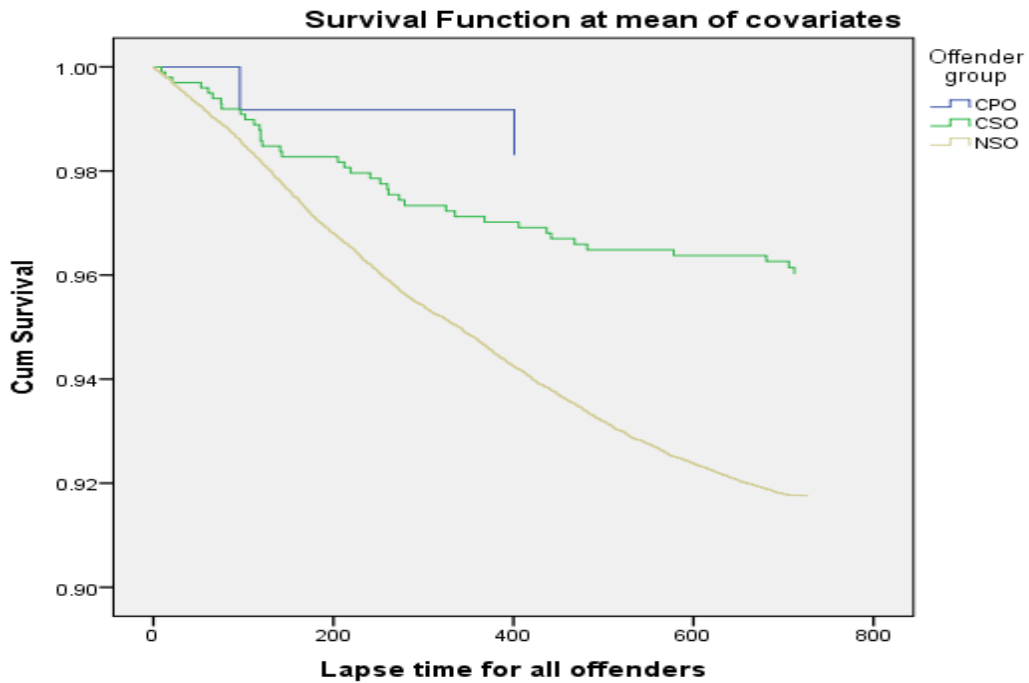
Note: CP = Child Pornography. CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

Figure 51.
Survival curves for the CPO, SO, and NSO community samples for sexual recidivism.



Note: CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

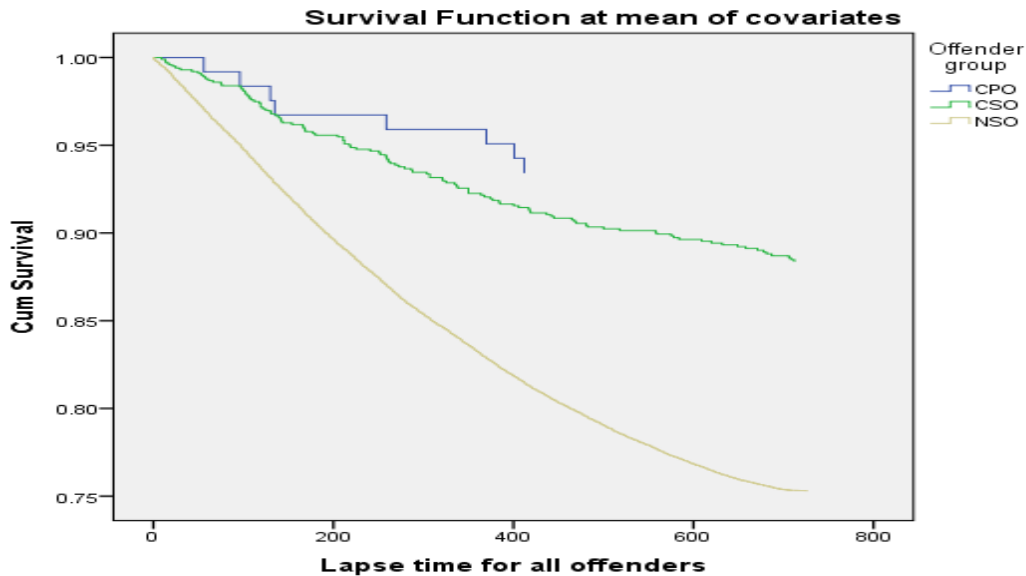
Figure 52.
Survival curves for the CPO, SO, and NSO community samples for violent recidivism.



Note: CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

Figure 53.

Survival curves for the CPO, SO, and NSO community samples for general recidivism.



Note: CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

ROC Coefficients for LSI-OR Total and Risk Levels with Recidivism Variables

A series of ROC analyses were conducted to examine the LSI-OR total and risk levels with CP, sexual, violent, and general recidivism for the CPO, SO, and NSO community groups. The AUC values for the CPO, SO, and NSO community groups for the four recidivism variables are presented in Table 70. The analysis of general risk/need total score on CP recidivism resulted in a ROC of $AUC = .391$ for the community CPOs, an $AUC = .461$ for the community SOs, and an $AUC = .593$ for the community NSOs. The general risk/need total score and the risk level were not predictive of CP recidivism among all three community offender groups, with the exception of the final risk level for the community SOs. Further, the analysis of the general risk/need total score on sexual recidivism resulted in a ROC of $AUC = .391$ for the community CPOs, an $AUC = .645$ for the community SOs, and an $AUC = .635$ for the community NSOs. The general risk/need total score and the risk levels were only able to predict sexual recidivism among the SO and NSO community samples, with the final risk levels outperforming the initial risk levels.

The analysis of the general risk/need total score on violent recidivism resulted in a ROC of $AUC = .565$ for the community CPOs, an $AUC = .742$ for the community SOs, and an $AUC = .676$ for the community NSOs. The general risk/need total score and the risk levels were not

predictive of violent recidivism among the community CPOs. However, the general risk/need total score and the risk levels were predictive of violent recidivism among the community SO and NSO samples, with the initial risk levels performing better than the final risk levels for both community groups. The analysis of general risk/need total score on general recidivism resulted in a ROC of $AUC = .629$ for community CPOs, an $AUC = .740$ for the community SOs, and an $AUC = .726$ for the community NSOs. Interestingly, the general risk/need total score was better able to predict general recidivism among the community SOs compared to the community NSOs, and was not predictive for the CPO sample. The LSI-OR risk levels were able to predict general recidivism in the SO and NSO community samples, with the initial risk level outperforming the final risk level after the override for these two samples. The LSI-OR risk levels were not predictive of general recidivism for the CPO sample. Figures 54 to 65 portray the ROC curves for the CPO, SO, and NSO community groups for the four recidivism variables.

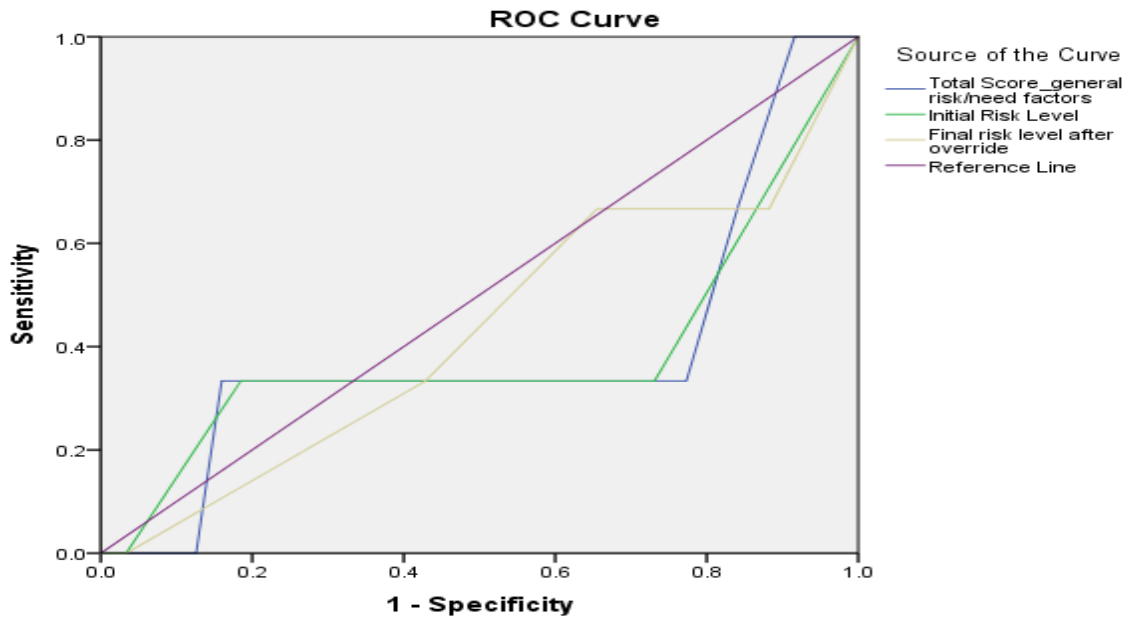
Table 70.

AUC values for the CPO, SO, and NSO community samples on the recidivism variables

LSI-OR Variables & Recidivism Variables	CPO Community AUC (95% CI)	SO Community AUC (95% CI)	NSO Community AUC (95% CI)
CP Recidivism:			
General Risk/Needs	.391 (.012, .770)	.461 (.000, .973)	.593 (.417, .769)
Initial Risk Level	.387 (.000, .800)	.431 (.000, .873)	.607 (.433, .781)
Final Risk Level After Override	.429 (.083, .774)	.772 (.623, .921)	.597 (.392, .801)
Sexual Recidivism:			
General Risk/Needs	.391 (.012, .770)	.645 (.556, .735)	.635 (.585, .685)
Initial Risk Level	.387 (.000, .800)	.620 (.531, .710)	.626 (.576, .676)
Final Risk Level After Override	.429 (.083, .774)	.649 (.565, .734)	.677 (.631, .723)
Violent Recidivism:			
General Risk/Needs	.565 (.056, 1.00)	.742 (.680, .805)	.676 (.667, .685)
Initial Risk Level	.515 (.000, 1.00)	.727 (.661, .793)	.662 (.653, .671)
Final Risk Level After Override	.617 (.357, .876)	.646 (.563, .730)	.659 (.650, .668)
General Recidivism:			
General Risk/Needs	.629 (.394, .863)	.740 (.695, .786)	.726 (.721, .731)
Initial Risk Level	.638 (.399, .877)	.724 (.677, .770)	.710 (.705, .715)
Final Risk Level After Override	.568 (.350, .786)	.660 (.612, .709)	.695 (.690, .700)

Note: AUC = Area under the Curve. CP = Child Pornography. CPO = Child Pornography Offender. SO = Sexual Offender. NSO = Non-sexual Offender.

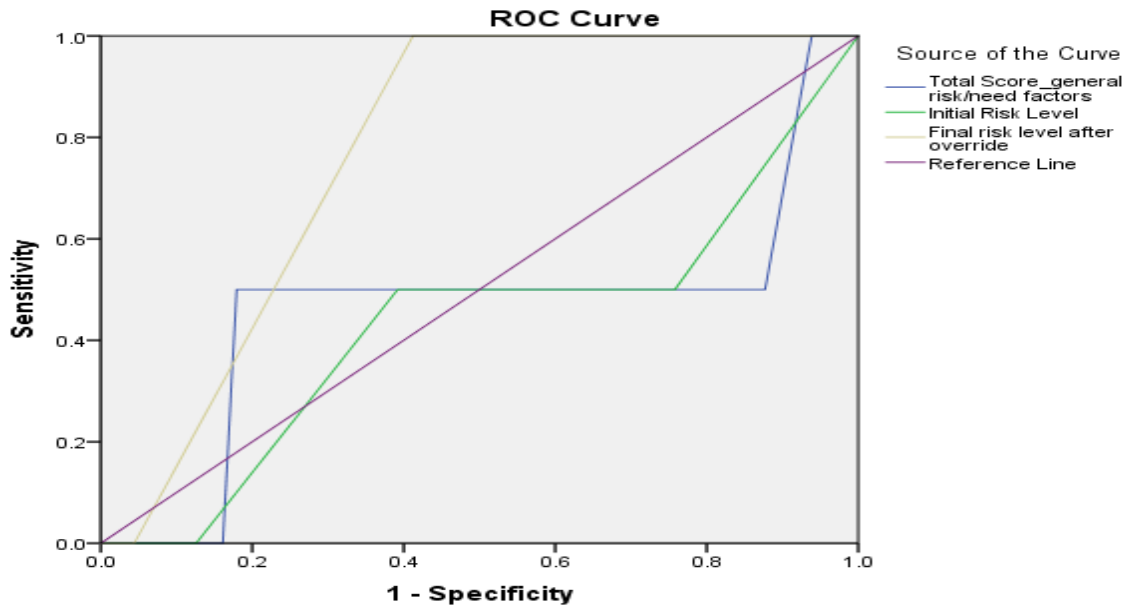
Figure 54.
 ROC curve on CP recidivism for the community CPOs.



Diagonal segments are produced by ties.

Note: ROC = Receiver Operator Characteristic. CP = Child Pornography. CPO = Child Pornography Offender.

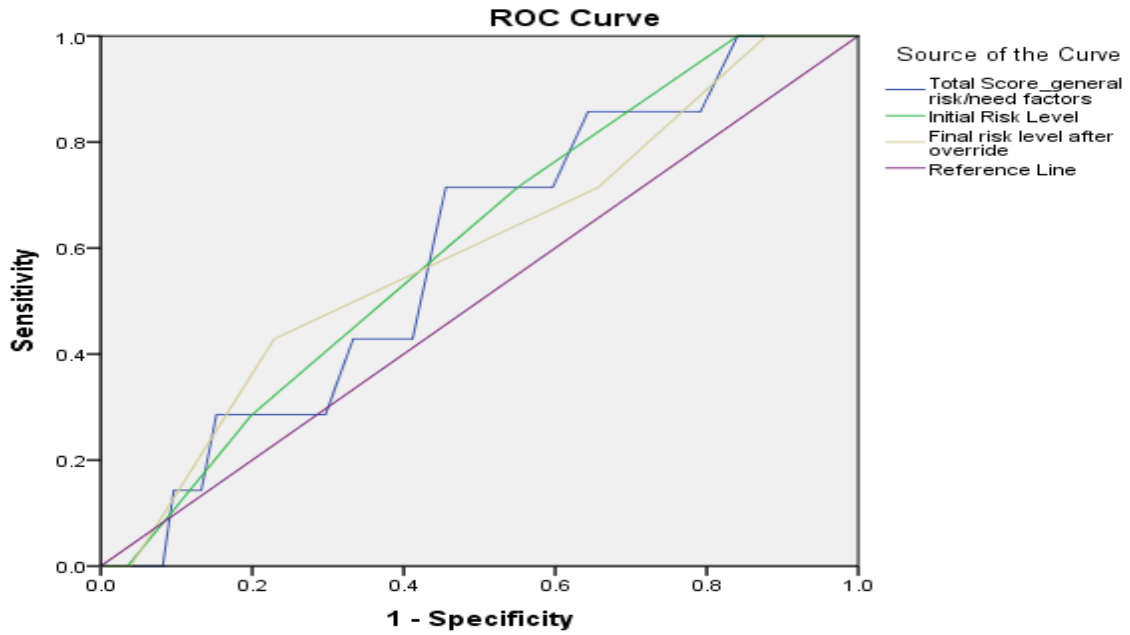
Figure 55.
 ROC curve on CP recidivism for the community SOs.



Diagonal segments are produced by ties.

Note: ROC = Receiver Operator Characteristic. CP = Child Pornography. SO = Sexual Offender.

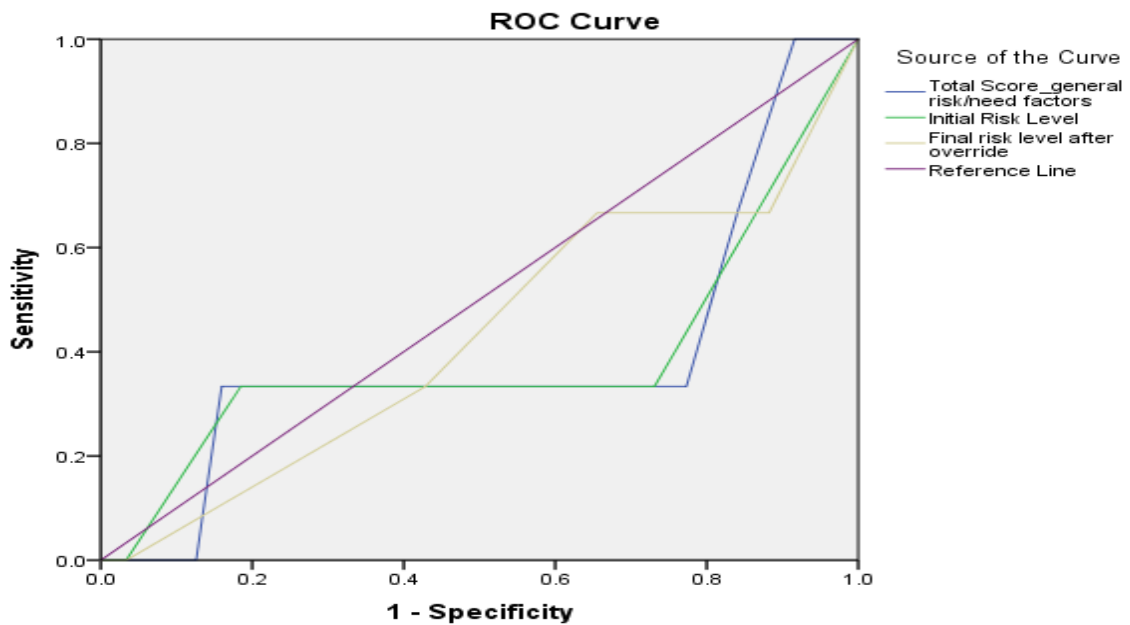
Figure 56.
 ROC curve on CP recidivism for the community NSOs.



Diagonal segments are produced by ties.

Note: ROC = Receiver Operator Characteristic. CP = Child Pornography. NSO = Non-sexual Offender.

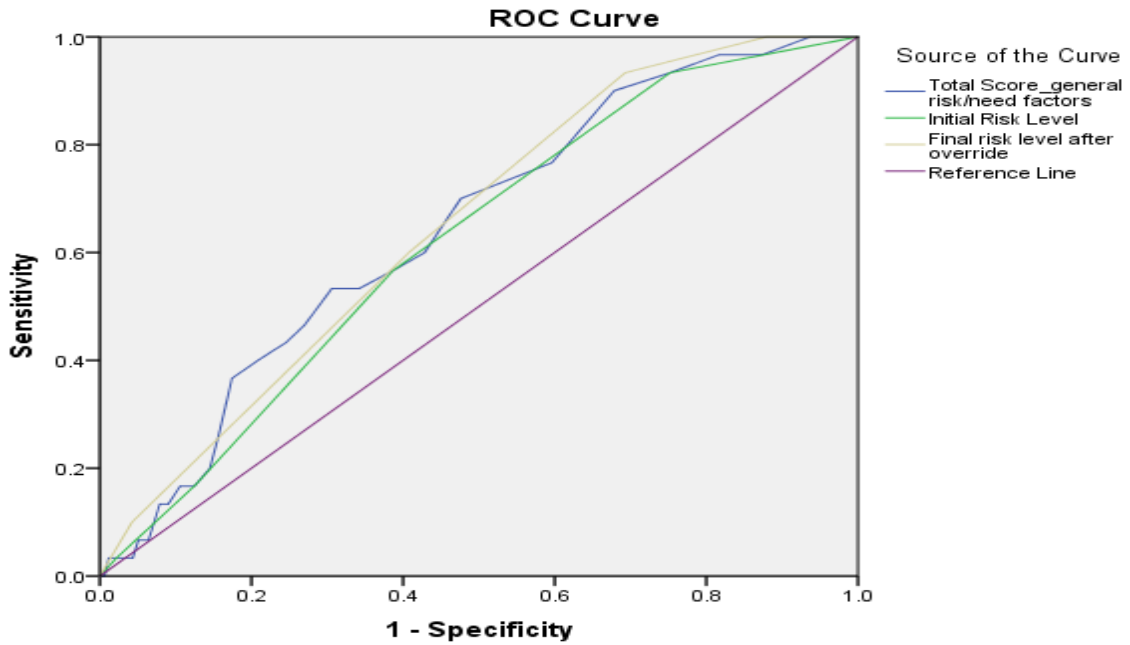
Figure 57.
 ROC curve on sexual recidivism for the community CPOs.



Diagonal segments are produced by ties.

Note: ROC = Receiver Operator Characteristic. CPO = Child Pornography Offender.

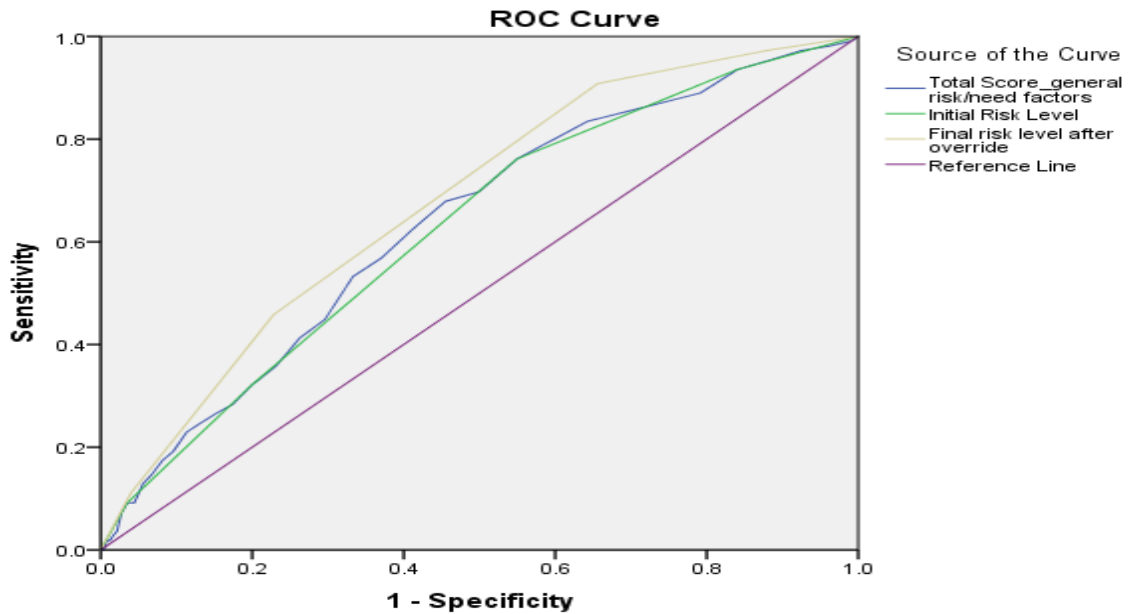
Figure 58.
 ROC curve on sexual recidivism for the community SOs.



Diagonal segments are produced by ties.

Note: ROC = Receiver Operator Characteristic. SO = Sexual Offender.

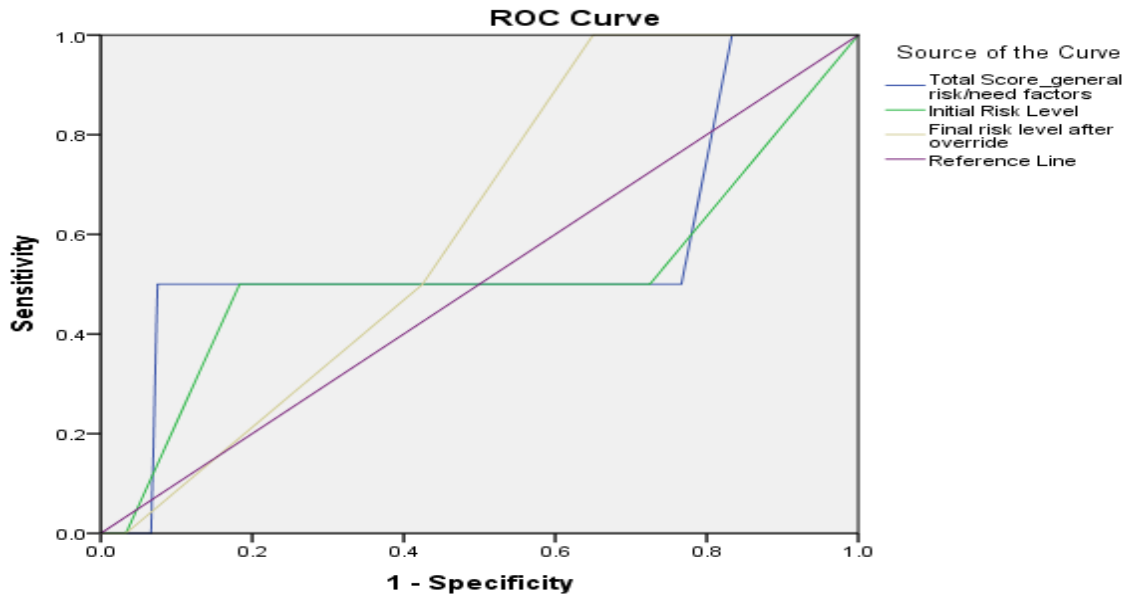
Figure 59.
 ROC curve on sexual recidivism for the community NSOs.



Diagonal segments are produced by ties.

Note: ROC = Receiver Operator Characteristic. NSO = Non-sexual Offender.

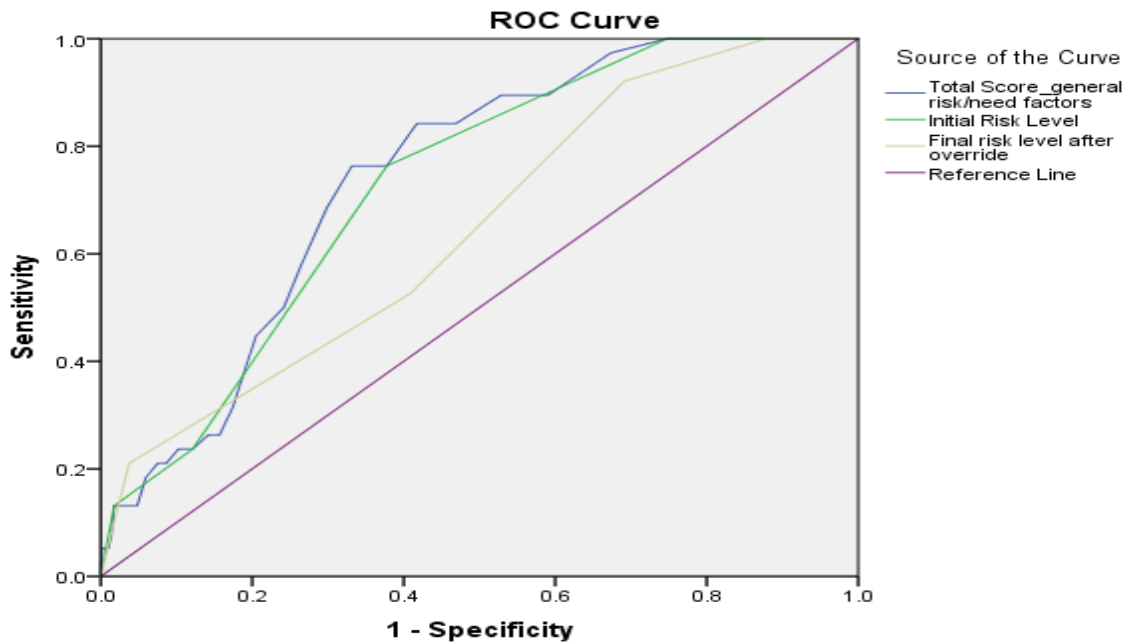
Figure 60.
 ROC curve on violent recidivism for the community CPOs.



Diagonal segments are produced by ties.

Note: ROC = Receiver Operator Characteristic. CPO = Child Pornography Offender.

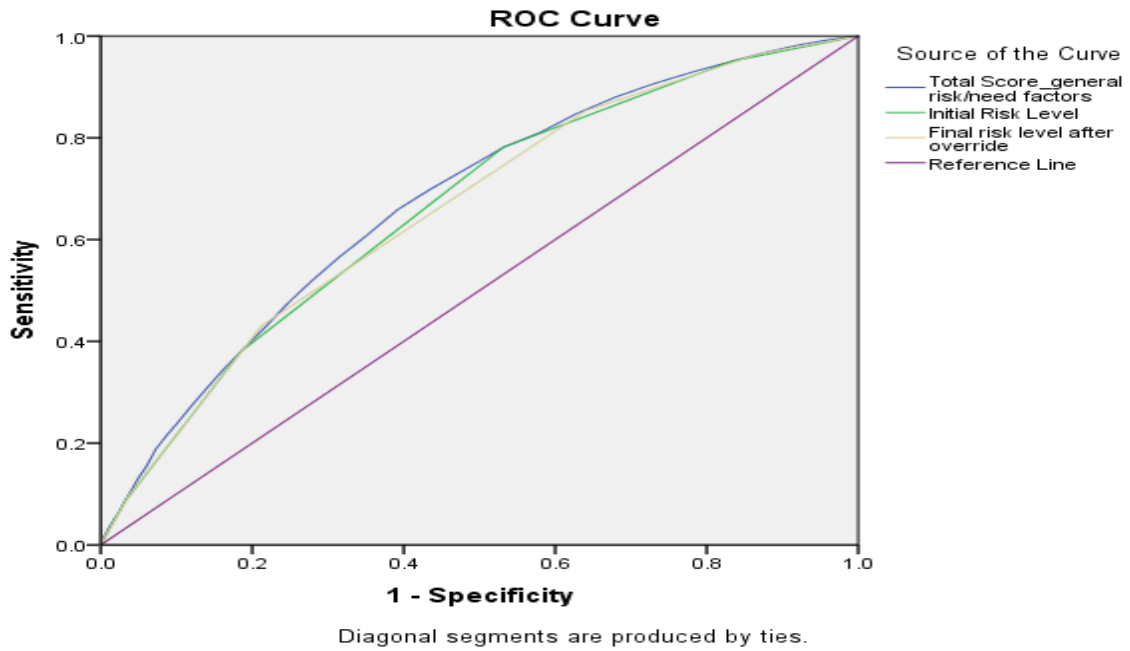
Figure 61.
 ROC curve on violent recidivism for the community SOs.



Diagonal segments are produced by ties.

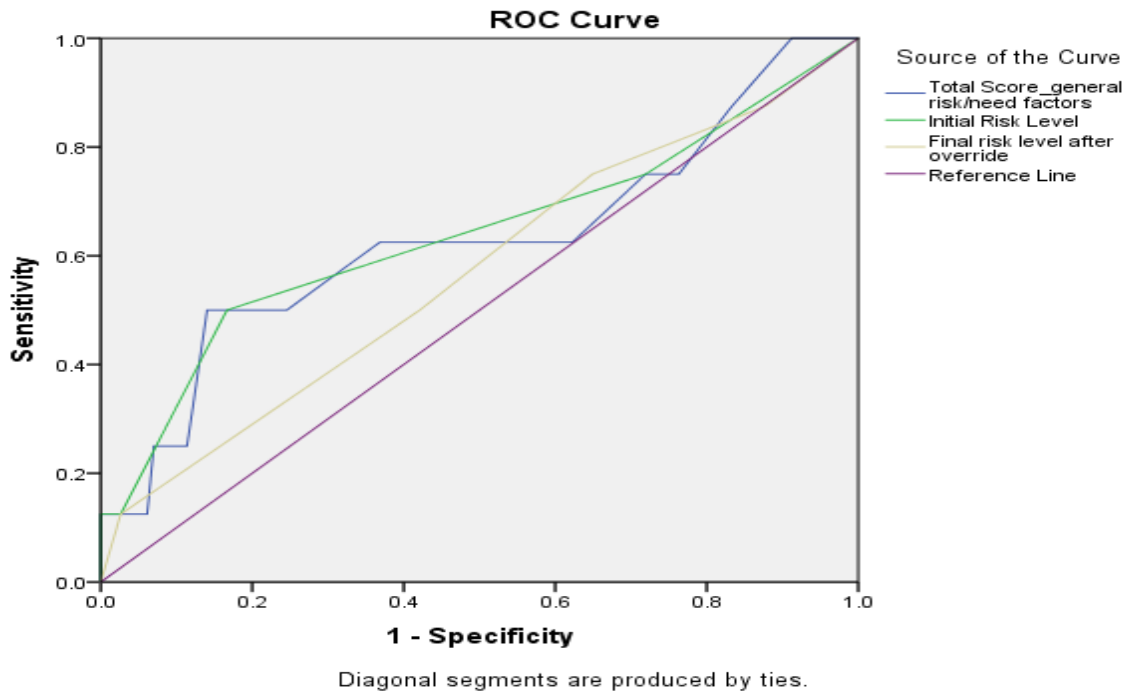
Note: ROC = Receiver Operator Characteristic. SO = Sexual Offender.

Figure 62.
 ROC curve on violent recidivism for the community NSOs.



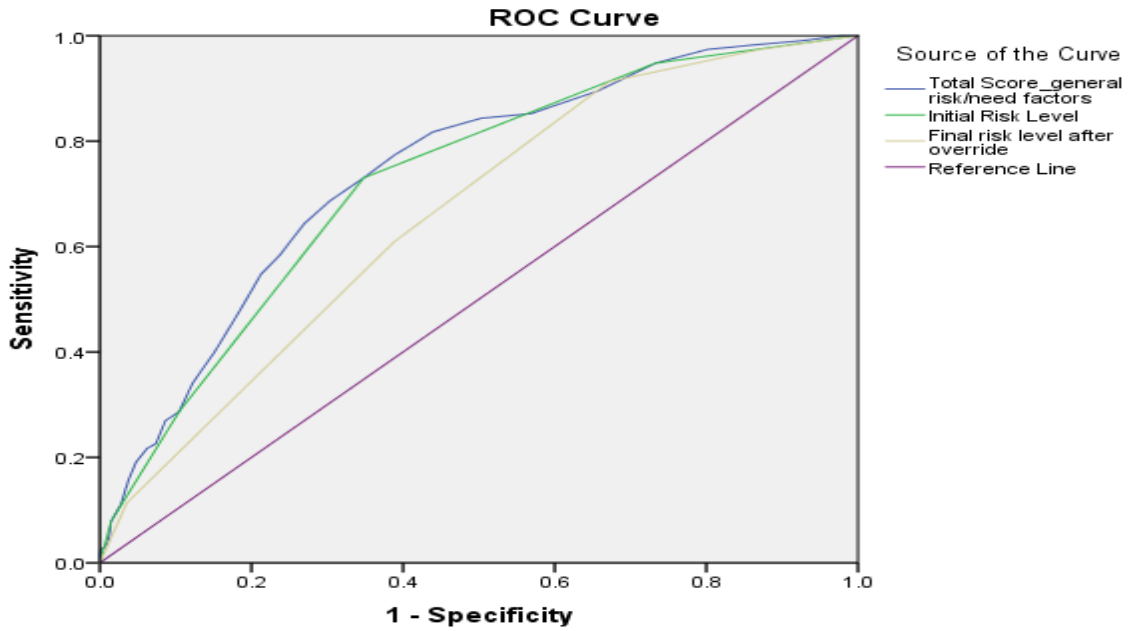
Note: ROC = Receiver Operator Characteristic. NSO = Non-sexual Offender.

Figure 63.
 ROC curve on general recidivism for the community CPOs.



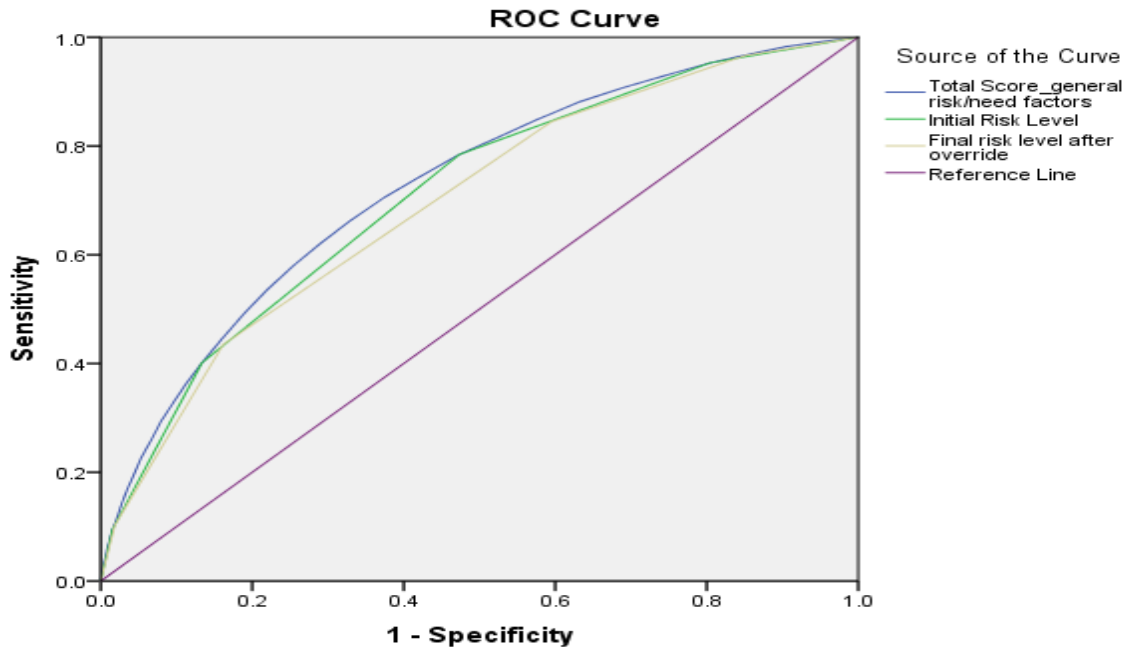
Note: ROC = Receiver Operator Characteristic. CPO = Child Pornography Offender.

Figure 64.
 ROC curve on general recidivism for the community SOs.



Note: ROC = Receiver Operator Characteristic. SO = Sexual Offender.

Figure 65.
 ROC curve on general recidivism for the community NSOs.



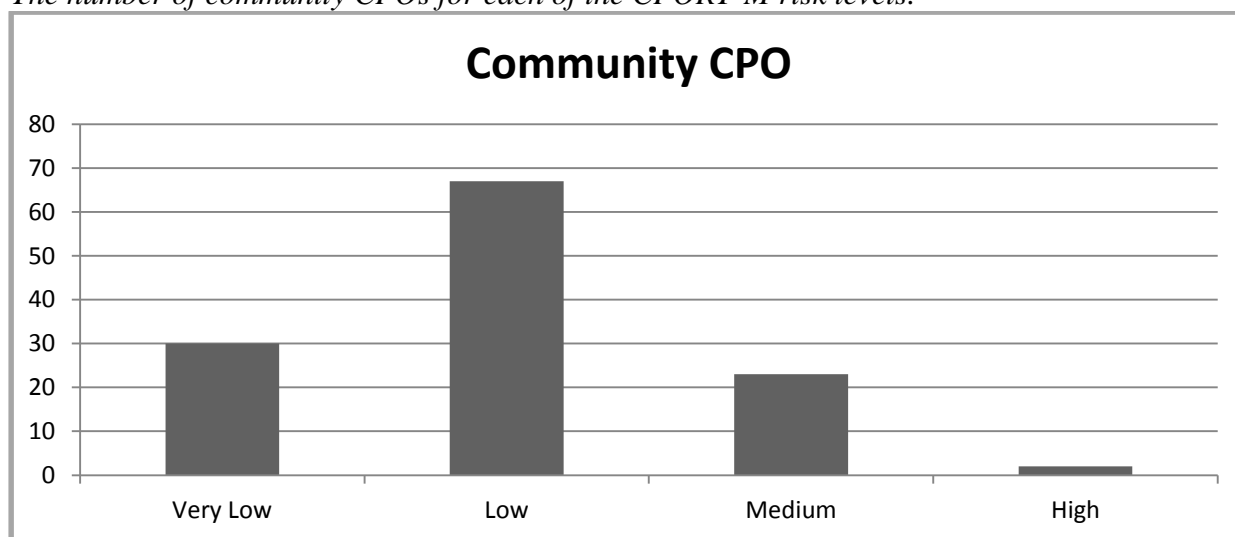
Note: ROC = Receiver Operator Characteristic. NSO = Non-sexual Offender.

CPORT-M Items and Total Risk Score

To reiterate, the five items used in the CPORT-M were age, prior criminal history, any contact sexual offending, any failure on conditional release, and any indication and/or admission of pedophilic or hebephilic sexual interests and these items were summed together to create five risk levels (very low, low, medium, high, and very high). A total of 57 (46.7%) community CPOs were rated as high risk on offender age; otherwise, were 35 years of age and younger. In addition, 58 (47.5%) community CPOs had a prior criminal history and one (0.8%) had a prior contact sexual offence. As well, one (0.8%) community CPOs were previously unsuccessful on conditional release and two (1.6%) were found to have pedophilic or hebephilic sexual interests. When examining the risk levels, a total of 30 (24.6%) community CPOs were very low risk on the CPORT-M, 67 (54.9%) were low risk, 23 (18.9%) were medium risk, and two (1.6%) were high risk (see Figure 66). As illustrated, the majority of the community CPOs were low risk offenders and none were rated as having very high risk.

Figure 66.

The number of community CPOs for each of the CPORT-M risk levels.



Note: CPORT-M = Child Pornography Offender Risk Tool – Modified. CPO = Child Pornography Offender.

Correlations between CPORT-M and Recidivism Variables

The correlations between the CPORT-M and CP, sexual, violent, and general recidivism were examined for the community CPOs to assess the applicability of the CPORT-M to this group of offenders. It is important to note that although correlations were conducted for all four

recidivism variables, the results must be taken with caution for CP and sexual recidivism due to the low base rates (i.e., below 10%). These correlations were calculated for the five items of the CPORT-M and the CPORT-M total score. The only significant correlation that was found for general recidivism among the community CPOs was any failure on conditional release (see Table 71).

Table 71.

Correlations between CPORT-M variables with recidivism variables for community CPOs

CPORT-M Variables	Types of Recidivism			
	CP (n=122)	Sexual (n=122)	Violent (n=122)	General (n=122)
CPORT-M Risk	-.144	-.144	.004	.056
Offender Age	-.043	-.043	.008	.017
Prior Criminal History	-.151	-.151	.006	.013
Any Contact Sexual Offences	-.014	-.014	-.012	-.024
Any Failure on Conditional Release	-.014	-.014	-.012	.343**
Pedophilic/Hebephilic Interests	-.020	-.020	-.017	-.034

Note: CPORT-M = Child Pornography Offender Risk Tool – Modified. CP = Child Pornography. CPO = Child Pornography Offender.

**Correlation is significant at the .01 level (2-tailed)

* Correlation is significant at the .05 level (2-tailed)

ROC Coefficients for CPORT-M Total Risk Score with Recidivism Variables

A series of ROC analyses were conducted to examine the CPORT-M total score with CP, sexual, violent, and general recidivism for community CPOs. The AUC values for the community CPO groups for the four recidivism variables are presented in Table 72. The CPORT-M total score was not predictive of any of the four types of recidivism for the community CPOs. Figures 67 to 70 illustrates the ROC curves for the CPO community groups.

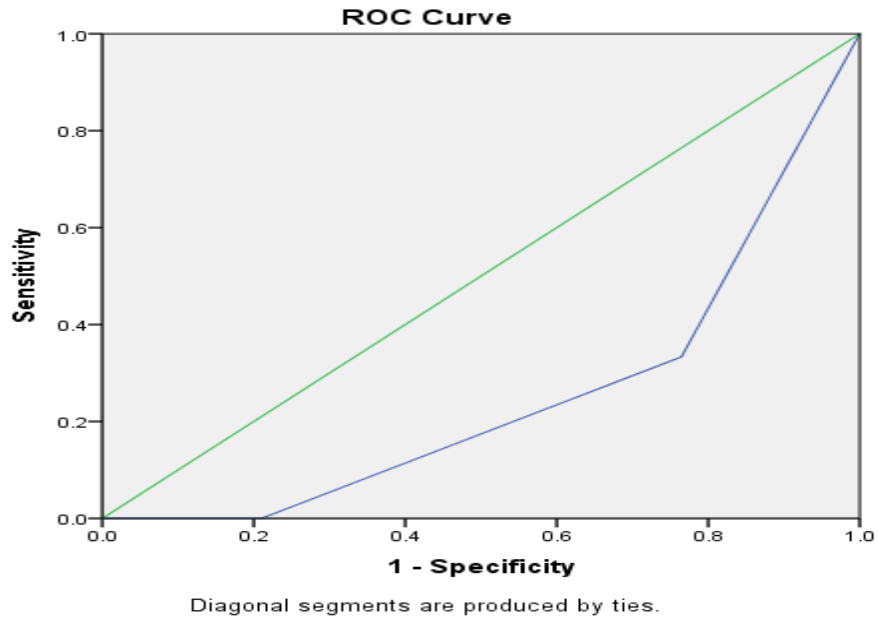
Table 72.

AUC values for the community CPOs on recidivism variables

CPORT-M Variable	Types of Recidivism			
	CP <i>AUC (95% CI)</i>	Sexual <i>AUC (95% CI)</i>	Violent <i>AUC (95% CI)</i>	General <i>AUC (95% CI)</i>
CPORT-M Total Risk Score	.249 (.000, .499)	.249 (.000, .499)	.506 (.000, 1.00)	.524 (.267, .781)

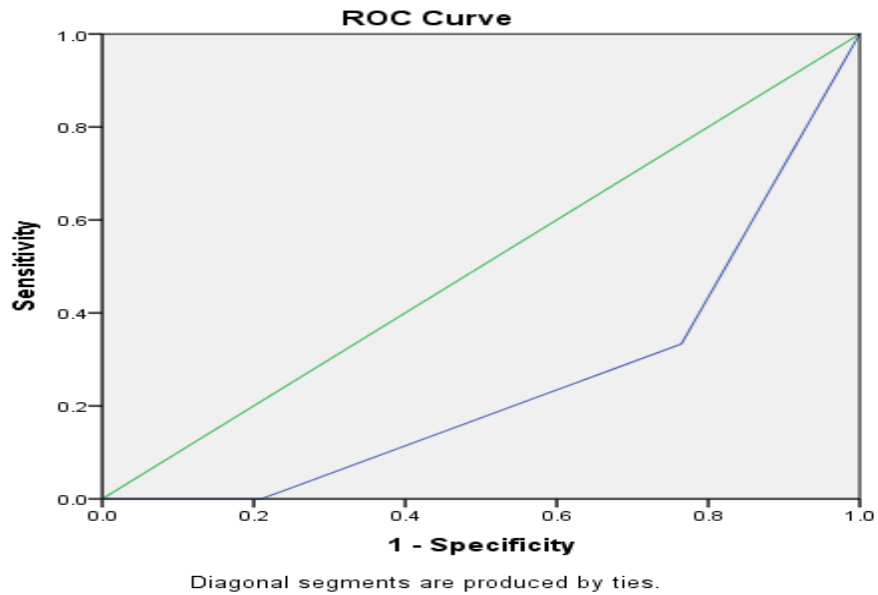
Note: AUC = Area under the Curve. CPORT-M = Child Pornography Offender Risk Tool – Modified. CP = Child Pornography. CPO = Child Pornography Offender.

Figure 67.
ROC curve on CP recidivism for the community CPOs.



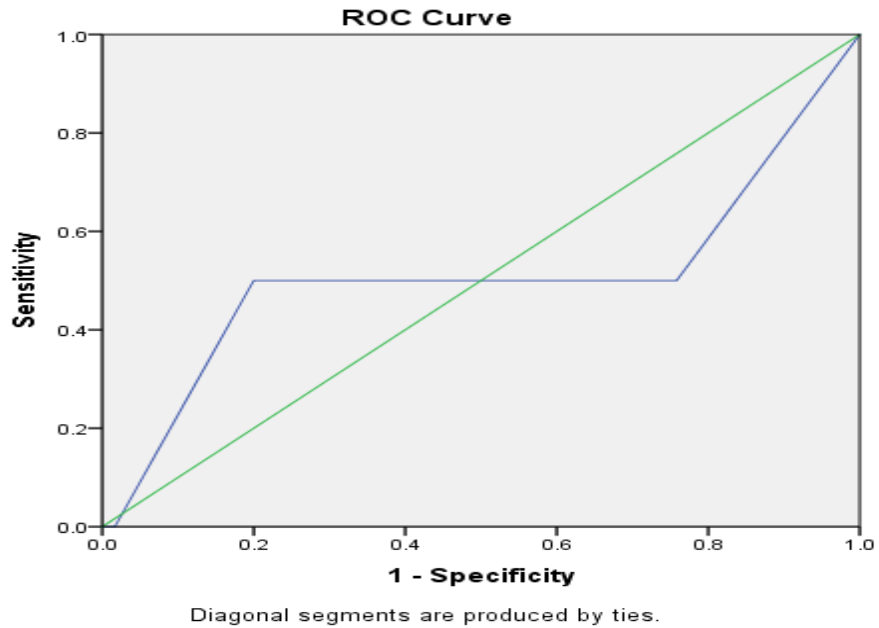
Note: ROC = Receiver Operator Characteristic. CP = Child Pornography. CPO = Child Pornography Offender.

Figure 68.
ROC curve on sexual recidivism for the community CPOs.



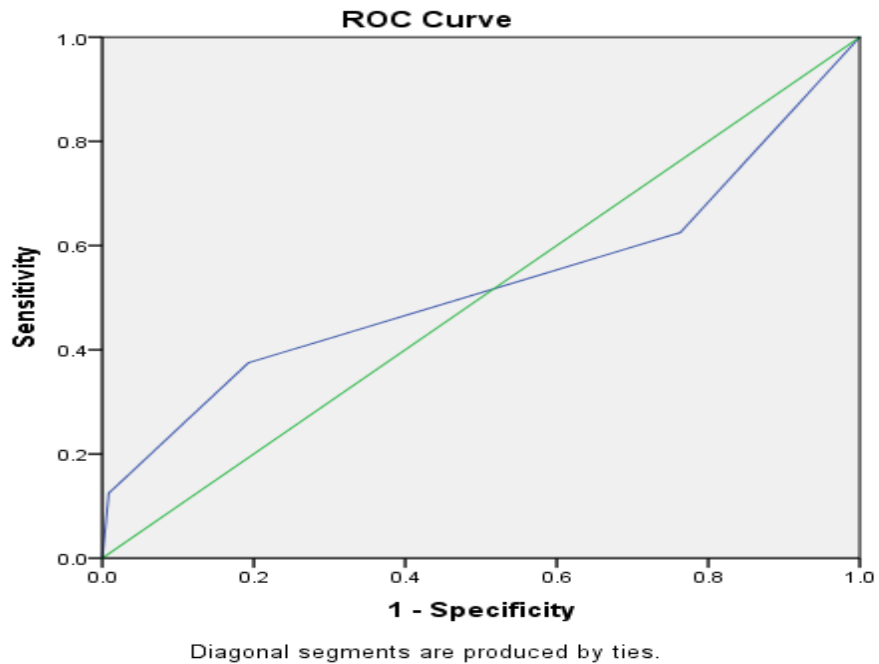
Note: ROC = Receiver Operator Characteristic. CPO = Child Pornography Offender.

Figure 69.
ROC curve on violent recidivism for the community CPOs.



Note: ROC = Receiver Operator Characteristic. CPO = Child Pornography Offender.

Figure 70.
ROC curve on general recidivism for the community CPOs.



Note: ROC = Receiver Operator Characteristic. CPO = Child Pornography Offender.

LSI-OR and CPORT-M – Summary and Convergent Validity

To assess the predictive accuracies of both the LSI-OR and the CPORT-M on the various types of recidivism, for the community CPOs, a summary table is provided below, as well a discussion of the convergent validity between the two risk assessment tools. The summary table of the correlations and the AUC values between the CPORT-M and the LSI-OR with the recidivism variables for the CPO community group is provided in Table 73. As illustrated, only the general risk/needs total score and the initial risk levels were significantly associated with general recidivism for the CPO community sample. As well, when examining the predictive validity of both tools for the community CPOs, none were predictive of CP, sexual, violent, and general recidivism.

Table 73.

Correlations and AUC values for the LSI-OR and CPORT-M variables with recidivism variables for community CPOs

	Types of Recidivism			
	CP (n=122)	Sexual (n=122)	Violent (n=122)	General (n=122)
Correlations:				
General Risk/Needs	-.058	-.058	.050	.187*
Initial Risk Level	-.058	-.058	.008	.187*
Final Risk Level	-.046	-.046	.059	.061
CPORT-M Risk	-.144	-.144	.004	.056
AUC Values (95% CI):				
General Risk/Needs	.391 (.012, .770)	.391 (.012, .770)	.565 (.056, 1.00)	.629 (.394, .863)
Initial Risk Level	.387 (.000, .800)	.387 (.000, .800)	.515 (.000, 1.00)	.638 (.399, .877)
Final Risk Level	.429 (.083, .774)	.429 (.083, .774)	.617 (.357, .876)	.568 (.350, .786)
CPORT-M Risk	.249 (.000, .499)	.249 (.000, .499)	.506 (.000, 1.00)	.524 (.267, .781)

Note: AUC = Area under the Curve. CPORT-M = Child Pornography Offender Risk Tool – Modified. LSI-OR = Level of Service Inventory – Ontario Revision. CP = Child Pornography. CPO = Child Pornography Offender.

**Correlation is significant at the .01 level (2-tailed)

* Correlation is significant at the .05 level (2-tailed)

Convergent Validity between the LSI-OR and the CPORT-M.

The convergent validity between the LSI-OR variables and the CPORT-M was assessed using correlations to examine if the tools were related for the CPO community sample. The CPORT-M was only correlated with the general risk/needs total score ($r = .188, p = .038$).