

Spanish Validation of the Child Pornography Offender Risk Tool (CPORT)

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ABSTRACT

The current study examined the validity of the Child Pornography Offender Risk Tool (CPORT) in a sample of 304 men arrested in Spain for child pornography (CP) offenses, distinguishing between CP-exclusive offenders ($n = 255$) and CP offenders with other criminal involvement ($n = 49$). In our 5-year fixed follow-up analysis, we observed a 2.3% sexual recidivism rate for the whole sample (2.0% new CP offenses, 0.3% new contact sexual offenses). ROC analyses detected some relative predictive ability of the CPORT for CP recidivism outcomes when the Correlates of Admission of Sexual Interest in Children (CASIC) was used to replace missing CPORT Item 5. Specifically, both CPORT and CASIC total scores might help predict new CP offending among CP-exclusive offenders ($AUC = .57$ and $.70$ respectively). Calibration analyses found that the observed recidivism rates were much lower than the expected recidivism rates presented by the tool developers, and, thus, suggest caution over the use of these norms for applied risk assessment. Our findings provide, to some extent, preliminary evidence of CPORT cross-cultural validity.

Keywords: risk assessment, child pornography, child sexual exploitation material, recidivism, CPORT

Introduction

The adaptation of Spanish criminal law to supranational normative demands for the protection of children has resulted in the incorporation of a unified definition of child pornography. Following the European Union Directive 2011/93, *child pornography* (CP) is defined in the Spanish Penal Code as a sexually explicit visual depiction of a person under the age of 18, including both *virtual* (i.e., realistic images of a child engaged in sexually explicit conduct or realistic images of the sexual organs of a child, for primarily sexual purposes) and *technical* CP (i.e., any material that visually depicts any person appearing to be a child engaged in real or simulated sexually explicit conduct or any depiction of the sexual organs of any person appearing to be a child, for primarily sexual purposes). However, unlike other countries, narratives describing sexual encounters involving children (Crookes, Merdian, & Hassett, 2017) or non-realistic depictions of fictional children (e.g., *shotacon* and *lolicon*; McLelland & Yoo, 2007; Savage, 2015) are considered legal materials in Spain.

Accessibility, Affordability, and Anonymity (“Triple A Engine”; Cooper, 1998) of child sexual exploitation materials (legally referred to as child pornography in Spain) in the era of Information and Communication Technologies (ICT) has posed a challenge worldwide (Henshaw, Ogloff, & Clough, 2017; Seigfried-Spellar & Soldino, 2019; Seto & Ahmed, 2014; Soldino & Guardiola-García, 2017; Wolak, Liberatore, & Levine, 2014). Since 2009, 4,122 individuals have been either arrested or investigated in Spain for CP offenses (Ministerio del Interior, 2018). According to the State Attorney General's Office report (Fiscalía General del Estado, 2019), data on CP offending have remained fairly stable over years, with an average of 722 legal proceedings a year in the last five years. Despite being a crime that is reported very rarely, along with the difficulties in its detection (Soldino & Guardiola-García, 2017) and investigation (e.g., in Spain, the use of the “virtual” undercover agent for cybercrime investigation was not

included in the Criminal Procedure Act until 2015), CP offenses represent 12.4% of the total number of legal proceedings initiated for cybercrimes in Spain (Fiscalía General del Estado, 2018).

Trait (e.g., antisocial personality) and state facilitating factors (e.g., intoxication) for contact sexual offending against children, along with situational factors (i.e., opportunity to commit the crime), are considered explanatory for CP offending among motivated individuals (Seto, 2019). However, it has been hypothesized that higher self-control levels, less facilitation factors, and less access to children might distinguish CP offenders from contact sex offenders (Babchishin, Hanson, & VanZuylen, 2015; Seto, 2019). Furthermore, prior studies suggest that CP users who present with risk factors associated with antisociality (i.e., personality traits, attitudes, beliefs and behaviors that underlie crime in general) and atypical sexuality (i.e., paraphilic sexual interests, excessive sexual preoccupation and other extreme or unusual aspects of sexuality) dimensions are more likely to commit new contact sexual offenses (Seto, 2013; Seto & Eke, 2015).

According to meta-analyses, observed sexual recidivism rates for the general sexual offender population are typically low. As an example, Hanson, Thornton, Helmus, and Babchishin (2016) reported 7.6% average sexual recidivism rates for routine/complete (no preselection) correctional samples ($n = 4,325$) within a 5-year follow-up; additionally, restricted comparisons with equivalent treatment and control groups showed treatment contributed to a relative reduction in sexual recidivism of 26.3% (Schmucker & Lösel, 2015). Although, studies analyzing the recidivism rates for CP offenders point to remarkably lower percentages, ranging from 0 to 9% for new CP offenses (Eke, Helmus, & Seto, 2019; Eke, Seto, & Williams, 2011; Faust, Bickart, Renaud, & Camp, 2015; Goller, Jones, Dittmann, Taylor, & Graf, 2016; Osborn, Elliott,

Middleton, & Beech, 2010; Seto & Eke, 2015; Seto, Hanson, & Babchishin, 2011; Soldino, Carbonell-Vayá, & Seigfried-Spellar, 2019) and 0 to 4% for new contact sex offenses (Eke et al., 2011; Faust et al., 2015; Osborn et al., 2010; Seto & Eke, 2015; Seto et al., 2011b; Soldino et al., 2019). However, previous studies suggest that when CP offenders' samples are sub-grouped into dual sex offenders (i.e., those who use CP and have also committed a contact sexual offense against a minor), observed sexual recidivism rates increase (25%; Eke et al., 2019; 17%; Soldino et al., 2019; 14%; Elliott, Mandeville-Norden, & Beech, 2019), as well as CP reoffending rates specifically (18%; Eke et al., 2019).

There are several standardized assessment tools available for the classification of contact sex offenders (e.g., Static-99R; Hanson & Thornton, 2000; or Risk Matrix 2000; RM2000; Thornton et al., 2003), based on their statistical likelihood for future recidivism (Helmus, 2018). Although, only two structured professional judgement tools have a professional Spanish adaptation: Sexual Violence Risk-20 (SVR-20; Boer, Hart, Kropp, & Webster, 1997; adaptation Hilterman & Andrés-Pueyo, 2005) and the Risk for Sexual Violence Protocol (RSVP; Hart et al., 2003; adaptation Hart et al., 2015). However, these tools have yet to be successfully validated in CP users and are generally poor predictors of the risk of recidivism for online-exclusive sex offenders (Henshaw et al., 2017; Merdian et al., 2018; Seigfried-Spellar & Soldino, 2019). In particular, the Static-99 (Hanson & Thornton, 2000) and the RM2000 (Thornton et al., 2003) were found to over-estimate the sexual recidivism risk posed by CP offenders (Osborn et al., 2010), especially when aggravating items related to the offender's non-contact sexual offense history and stranger victims were considered (Osborn et al., 2010; Thornton, 2007). Moreover, even when these items were excluded from the coding procedure, the tools did not predict recidivism (AUC = .50; 95% CI [.36, .65]; Wakeling, Howard, &

Barnett, 2011). In response, researchers developed specific police-prioritization tools for CP offenders in recent years, such as the Kent Internet Risk Assessment Tool-Version 2 (KIRAT-2; Long, Alison, Tejeiro, Hendricks, & Giles, 2016), which is designed to assist in the prioritization of suspects according to their likelihood to have already committed contact sexual offenses against children.

The Child Pornography Offender Risk Tool (CPORT; Seto & Eke, 2015) is a risk assessment tool tailored to predict any sexual recidivism in adult males convicted of CP offenses (Eke, Helmus, & Seto, 2018). The CPORT was initially developed with a Canadian sample of 266 men convicted of CP offenses with a fixed 5-year follow-up period (Seto & Eke, 2015) and subsequently validated with a geographically similar sample of 80 men (resulting in a combined validation sample of 346 individuals; Eke et al., 2019). Predictive accuracy analyses revealed the CPORT significantly predicted any sexual recidivism (Area Under the Curve (AUC) = .72, 95% CI [.64, .81]), as well as CP recidivism specifically (AUC = .74, 95% CI [.63, .84]). This tool has been translated into Dutch (Wilpert, Smid, & Wever, 2018) and Spanish (Soldino & Carbonell-Vayá, 2018); although, it has yet to be validated in geographically and culturally different samples.

Prior studies suggest there is good reason to expect differences between samples from different cultures, based on the influence of cultural and environmental factors on criminal behavior (such as CP offending; Pascual, Giménez-Salinas, & Igual, 2017) across countries (D'Alessio, Čeč, & Karge, 2017; Sea, Beauregard, & Martineau, 2019). In this sense, the cross-cultural applicability, reliability, and validity of assessment tools for offender population becomes crucial (McCuish, Mathesius, Lussier, & Corrado, 2018; Shepherd, 2016; Wilson, Abramowitz, Vasilev, Bozgunov, & Vassileva, 2014). As an example, severity scales for classifying CP content designed in other countries

(e.g., SAP scale; Sentencing Advisory Panel, 2002), were found not completely suitable for the classification of CP content seized by Spanish law enforcement agencies (Pascual et al., 2017). As a result, these authors created the Spanish Classification of Child Sexual Exploitation Images (CIESI). Results showed greater frequencies of CP photography classified as nudity or erotic poses (CIESI's level 1), while most of the CP videos were labeled as sexual activity with penetration from adult to child (CIESI's level 4). Conversely, there are also reasons to expect similar risk factors across countries, when the same type of criminal behavior is considered. In this sense, risk assessment tools such as Static-99R (Hanson & Thornton, 2000) have shown consistent discrimination across inter-cultural samples (e.g., Static-99R predicted sexual recidivism among US-born Latinos; Leguízamo, Lee, Jeglic, & Calkins, 2017; American individuals with Black heritage; Lee & Hanson, 2017; and Indigenous peoples in Canada; Lee, Hanson, & Blais, 2019); which suggest CPORT could also evidence cross-cultural validity.

The present study

The primary aim of this work was to conduct the first CPORT cross-cultural validation study in a sample of men arrested in Spain for CP offenses. To this end, we replicated the study by Eke et al. (2019), coding data from the digital investigation files from the Spanish National Police. Part of the aim of this research was also to examine the amount of missing, but potentially relevant data in the digital investigation files (e.g., information included in the seven items of the CPORT), identified as risk factors for recidivism among this population. In addition, we assessed separately the CPORT predictive accuracy for CP-exclusive offenders.

We hypothesized that the CPORT was significantly predictive of sexual recidivism outcomes for CP offenders, regardless of whether CASIC was used as a

substitute for CPORT Item 5 or not. However, based on the differences between Canada and Spain in the criminal prosecution of these crimes (i.e., legality of non-realistic depictions of fictional children and CP narratives; illegality of virtual undercover police officers until 2015) and differences in the definition of recidivism (i.e., new arrests vs. charges/convictions) between the CPORT development/validation samples (Eke et al., 2019; Seto & Eke, 2015) and ours, we expected to find different recidivism rates among our sample.

Method

Sample

The initial sample consisted of 544 CP digital case files provided by the three Child Protection Groups of the Central Cybercrime Unit (UCC) of the Spanish National Police which met the eligibility criteria. Closed investigations with sufficient information were included if they involved a man (age 18 or older) arrested for (at least) one CP offense (i.e., accessing, possession, purchasing, distributing, or making/production) between 2009 and 2013.

The initial offense investigated by law enforcement was considered to be the index CP offense. In those four cases where law enforcement arrested the same person more than once between 2009 and 2013, all arrests were initially included in the study. Then, one of the arrests was randomly designated as the index offense, resulting in the other CP arrests becoming either part of the offender's criminal history or a recidivism event. Due to time constraints in data access, and to avoid an overrepresentation of cases from more recent years, which could reflect changes in the characteristics and modus operandi of CP offenders over years (e.g., different platforms used to access the CP material; Soldino & Guardiola-García, 2017), we randomly selected 71 cases per

year (as the total number of arrests in 2009 was 71). Finally, we only included those individuals who had at least 5 years at risk for further offenses (i.e., individual's opportunity to offend while residing in the community), resulting in a total sample of 304 arrestees.

Cases initially came to the attention of the police in a variety of ways, including third-party reporting (2.3%; e.g., computer technician discovered a customer had CP on his computer and called the police), victim complaints (3.0%; e.g., for those who had also committed online sexual solicitation offenses), and offender activity online (94.7%; e.g., peer-to-peer (p2p) sharing discovered by police). Cases that initially came to the attention of the police for victim complaints regarding contact sexual offenses were investigated by the Family and Women Unit (UFAM) of the National Police, and therefore, were not included in this study. Most arrestees (303 of the 304) had used online technologies to commit (at least in part) their CP offenses. Only one individual created all of the CP material himself during contact sexual offenses perpetrated in an underdeveloped country (detected during a child-sex tourism police investigation).

We distinguished CP offenders according to their criminal histories, dividing them into those who exclusively had CP offenses ($n = 255$) and those who also had committed other offenses (including non-sexual, non-contact-sexual and/or contact sexual offenses, with the same or different victims as those depicted in the CP material) either pre-index or at index ($n = 49$). Criminal history and details about the index CP offending, for the entire sample and for the two groups distinguished by offense history, are summarized in Table 1. Due to the low number of individuals with pre-index or index contact sexual offenses ($n = 7$), this study is generally examining non-contact CP users.

Measures

CPORT. The CPORT includes seven variables based on the correlates of recidivism in CP offenders (Eke et al., 2011; Seto et al., 2011b) coded as present or absent: (1) age at the time of the index investigation, 35 or younger; (2) any prior criminal history; (3) any failure on conditional release; (4) any contact sexual offending; (5) indication (admission or diagnosis) of sexual interest in prepubescent or pubescent children; (6) more boy than girl content in child pornography; and (7) more boy than girl content in other child-related materials.

CASIC. The Correlates of Admission of Sexual Interest in Children (CASIC; Seto & Eke, 2017) analyzes the behavioral correlates of admission of pedophilic or hebephilic sexual interests (Eke et al., 2018). This tool was developed to overcome concerns regarding the refusal of many arrestees to respond about their sexual interest in children and falsification vulnerability of CPORT Item 5. CASIC total score can be used as a substitute for CPORT Item 5 (admission of sexual interest in children) in the prediction of sexual recidivism (AUC = .71, 95% CI [.65, .77]). It includes six items (coded yes/no): (1) never married; (2) child pornography content included videos; (3) child pornography content included sex stories involving children; (4) evidence of interest in child pornography spanned 2 or more years; (5) volunteered in a role with high access to children; and (6) engaged in online sexual communication with a minor or officer posing as a minor. Results indicated a CASIC score of 3 or more could be used as evidence that CPORT Item 5 is present (Eke et al., 2019).

CPORT and CASIC items were coded using the same rules as those described in the scoring guide (Eke et al., 2018). Based on the analyses of Seto and Eke (2017), CASIC scores of 3 and higher were used as a substitute for CPORT Item 5 when information was missing (this substitution was only used when specified). Frequencies

for the CPORT and CASIC items, amount of missing information, and mean total scores are described in Table 2.

Procedure

Information was coded at the headquarters of the UCC by the first author. Data regarding each case was retrieved from digital police files that usually included police occurrence reports, statements made by the arrestee, the victim, or other witnesses, forensic computer analysis reports, and details about the CP content seized by the police. In those cases where details about the CP and other child-related content were not reported, one police officer coded CPORT Items 6 and 7 by analyzing the content seized during the case investigation (when accessible in a digital format). Criminal history records and recidivism data for each individual were retrieved from the National Police database (i.e., a police computer application which includes information from all Spanish police forces, except the Ertzaintza¹). Data regarding imprisonment length were retrieved from the Prison Information System (i.e., a digital database of correctional reports from the Spanish prisons, except those located in Catalonia²). Institutional research approval and permission to access case file information were obtained from the National Police and the Secretary of State for Security.

Initially, 44 cases were randomly selected for discussion of the coding schemas (and later included in the final sample). First and second author, the leader of the Child

¹ Police force for the Basque Country. Arrests made in the Basque Country represent 1.2% of the national total (Ministerio del Interior, 2018).

² Catalonia is the only Autonomous Community that gathers all the penitentiary administration competences transferred. The prison population in Catalonia represents 14.2% of the national total (Ministerio del Interior, 2018).

Protection Group I, and the authors of the CPORT, were involved in these initial discussions on the coding schemas. Due to security restrictions and time limitations in accessing the investigation case files, all 304 cases included in the present study were coded on-site only by the first author. Content seized during the case investigation (i.e., CPORT Items 6 and 7) and criminal records were analyzed and coded by one police officer due to restricted access. Time required to code each case file depended on the amount and organization of the information reported, ranging between 1 to 15 cases per day. The coding domains were: (a) details of index offending, (b) criminal history (number and type of previous police arrests), (d) CPORT items, (e) CASIC items, (g) imprisonment (time spent in prison after the index arrest), and (f) recidivism (number and type of new police arrests).

The coding process was guided by the authors of the CPORT (Michael C. Seto and Angela W. Eke) through email communications. Questions that arose during the coding process were put forward for consultation and resolved by consensus. Table 1 “access to CP” categories were designed and coded by the first and third author together. Any doubts in the coding process were discussed with a Detective from the Tippecanoe County High Tech Crimes Unit (West Lafayette, IN, USA) and any disagreements were resolved by consensus.

Follow-up time and recidivism coding

We coded any new police arrest as *recidivism*, although we focused our analyses on *sexual* recidivism (i.e., offenses that could be clearly identified as sexual, either contact or non-contact, on the basis of the information provided in the police database). We further distinguished between *contact sexual recidivism* (i.e., sexual offenses involving physical contact with a victim) and *CP recidivism* (i.e., accessing, possession,

purchasing, distributing, or making/production; not involving physical contact with a victim). These recidivism categories were not mutually exclusive.

The majority of the sample (96%) were not incarcerated for their index offense³. As such, follow-up time was calculated as the difference between the date of the index arrest and the date when criminal records were checked (January-July 2018). For those with incarceration (4%), time in custody (i.e., time spent in prison after the date of the arrest, for the index or any subsequent offense) was subtracted, so follow-up time represented the individual's opportunity to offend while residing in the community. The average follow-up time, for the whole sample, was 6.9 years ($SD = 1.2$ years; range = 5 – 9 years). We also calculated time at risk as the difference between the date of the index arrest and the date of the first sexual recidivism event, removing the time spent incarcerated for the minority of individuals that were incarcerated following the index offense. Following the CPORT development and validation studies (Eke et al., 2019; Seto & Eke, 2015), we conducted a 5-year fixed follow-up analysis to reduce random variation in the study, to control for variability in follow-up time, and to allow for calibration analyses. We coded whether an individual committed a new sexual offense within the 5-year follow-up period.

Data analyses

Analyses were pre-specified prior to data collection based on Eke et al.'s (2019) previous validation study; although, further analyses were also implemented to compare

³ Replacement of prison sentences is contemplated by the Spanish legislation for cases in which custodial sentences do not exceed two years, in non-habitual prisoners. According to the Spanish Criminal Code, CP possession offenses shall be punished with the penalty from three months to a year of imprisonment.

the characteristics of the subgroups and for calibration purposes. First, we analyzed the characteristics of our sample. We used *Odds Ratios (OR)* and 95% confidence intervals (95% CI) to examine any significant differences between the two groups of CP offenders (Helmus & Hanson, 2011). An *OR* is defined as $p/(1-p)$, where p is the raw proportion of the sample with the characteristic.

Second, recidivism outcomes and CPORT total scores were analyzed and compared between groups (i.e., CP-exclusive offenders and CP offenders with other known criminal involvement either pre-index or at index). Dichotomous outcomes were compared with ORs, while Mann-Whitney U (r was the effect size statistic for this test; Field, 2013) and t -tests were used for continuous variables (with Cohen's d as the effect size measure; Cohen, 1988).

Third, relative predictive accuracy (i.e., discrimination) of the CPORT items and total scores was assessed using the Area Under the Curve (AUC) from Receiver Operating Characteristic (ROC) analyses. AUC has been considered a desirable effect size statistic, given its robustness to base rate variations (Babchishin & Helmus, 2016). Its values range between 0 and 1, representing the proportion of recidivists who obtained a higher score on the CPORT than non-recidivists; values close to 0 and 1 indicate better positive predictive accuracy, whereas values close to .50 correspond to chance classification. AUCs of .56, .64, and .71 were considered small, moderate, and large effect sizes, respectively, as they roughly correspond to Cohen's d values of .20, .50, and .80 (Rice & Harris, 2005). In addition, AUCs for the individual CPORT items and total scores were analyzed separately for CP-exclusive offenders.

Fourth, the absolute accuracy (i.e., calibration) of the CPORT was evaluated (i.e., the extent to which the observed recidivism rate per CPORT score matched the expected recidivism rates from the official recidivism estimates for the tool; Eke et al.,

2019). To this end, we calculated the Expected/Observed (E/O) index (i.e., the ratio of the expected number of recidivists to the observed number of recidivists; Hanson, 2017) for each CPORT total score. The number of expected recidivists for each CPORT score in the Eke et al.'s study (2019) was calculated using the reported sample size for each risk score and the CP recidivism estimates derived from logistic regression for the combined sample (i.e., multiplying the proportion and the sample size with that score provided by the tool developers). The number of expected recidivists was reported to one decimal place for greater precision in calculations. E/O index values of 1 correspond to perfect calibration; thereby, a 95% CI including 1 indicates no statistically significant differences between observed and expected recidivism rates ($p > .05$). Values below 1 correspond to under-predicted CP recidivism; whereas values above 1 indicate the risk tool over-predicted CP recidivism. The statistical power of this test is affected by the absolute number of recidivists; this is expected to be an issue for the current work due to generally lower reported recidivism numbers for CP offenders.

Results

As shown in Table 1, both differences and similarities were found between groups distinguished by offense history. Most of the arrestees in both groups had distributed CP material, mainly using p2p platforms. However, CP-exclusive offenders were less likely to engage in CP production or use texting, webcams, or social media to access CP content. On the other hand, 14.3% of CP offenders with other criminal involvement ($n = 7$) were arrested for contact sex offenses either at index or pre-index.

Sexual, contact sexual, and CP recidivism rates for a fixed 5-year follow-up period are reported in Table 2, distinguished by offender type. There were no statistically significant differences between groups in terms of recidivism rates, nor in the time elapsed between the date of the index arrest and the date of the first sexual

recidivism event. Since 6 out of 7 recidivists reoffended with a CP offense, we focused our subsequent analyses on this type of recidivism.

Differences between groups in CPORT and CASIC total scores are examined in Table 3. CP-exclusive offenders were less likely to score positively on CPORT Items 2 (*prior criminal history*), 3 (*any failure on conditional release*), and 7 (*more boy in nudity/other material*) than CP offenders with other criminal involvement; however, this group was significantly more likely to score positively on CASIC Item 4 (*CP activity spanning ≥ 2 years*) than CP offenders with other criminal involvement. Total scores were analyzed with and without missing information, as well as the effect of CASIC substitution for missing CPORT Item 5. CP offenders with other criminal involvement scored higher than CP-exclusive offenders on the CPORT, either using the CASIC as a substitute for CPORT Item 5 or not. However, CPORT scores with no missing information were only available for 2% of the sample ($n = 6$). CASIC total scores were not significantly different between groups.

Relative predictive accuracy (discrimination)

Relative predictive accuracy of individual CPORT items and total scores (with and without CASIC substitutions) for CP recidivism specifically are presented in Table 4. Relative predictive accuracy of individual CASIC items and total scores was also analyzed even though this tool was not developed as a risk assessment tool. CPORT Items 1 (*age at the time of the index investigation, 35 or younger*), 2 (*any prior criminal history*) and 6 (*more boy than girl content in child pornography*) had a small effect size in predicting CP recidivism specifically. Effect size (AUC = .54) for the CPORT total score, regardless of missing information, did not predict CP recidivism. Nevertheless, when using the CASIC as a substitute for CPORT Item 5, CPORT total scores reached a small effect size (AUC = .56) in predicting CP recidivism specifically. When restricted

to cases with one or no missing items (using the CASIC substitution), AUC's effect sizes were no longer statistically significant. The predictive accuracy of CASIC total scores did not reach statistical significance for CP recidivism; however, CASIC Item 4 (*evidence of interest in child pornography spanned 2 or more years*) individually approached a medium effect size (AUC = .63) for CP recidivism outcomes. Furthermore, CASIC Item 2 (*child pornography content included videos*) had a small effect size (AUC = .57) in predicting CP recidivism specifically.

When predictive accuracy was analyzed separately for CP-exclusive offenders, AUCs for CPORT (regardless of missing information; AUC = .57) and CASIC total scores (AUC = .70) showed a small and medium effect size respectively in predicting CP recidivism specifically (see Table 4). As observed for the whole sample, CPORT Items 1, 2, and 6 had a small effect size in predicting CP recidivism; however, CPORT Item 5 (*pedophilic/hebephilic interests*; using CASIC substitution) also reached a small effect size (AUC = .60) for CP recidivism outcomes. Furthermore, CASIC Items 1 (*never married*) and 2 (*CP content included videos*) showed a small effect size in predicting CP recidivism among CP-exclusive offenders.

Absolute accuracy (calibration)

Observed and official predicted 5-year CP recidivism probabilities for the CPORT are presented in Table 5. E/O index was calculated only for CPORT scores 0, 1 and 2; as these were the only risk categories with observed CP recidivists (the E/O index cannot be calculated when the observed number of recidivists is zero; Hanson, 2017). With regard to CPORT scoring, all cases (regardless of missing items and using the CASIC substitutions for CPORT Item 5) were considered in our sample, as this was the only scoring that reached a small effect size in predicting CP recidivism specifically.

In contrast, official recidivism estimates were restricted to cases with no more than one item with missing information.

For individuals with a CPORT total score equal to 0, the tool predicted 60% of the observed CP recidivism rate (i.e., the CPORT under-predicted recidivism); although, the difference between expected and observed recidivists was non-significant, as evidenced by a 95% CI [0.15, 2.40] that overlapped with 1. However, the CPORT predicted 90% more CP recidivists than was actually observed for CPORT total scores of 1 (E/O index = 1.90), and over-predicted almost three times the number of actual recidivists for CPORT total scores of 2 (E/O index = 2.75). Although the difference between expected and observed recidivists was also non-significant for CPORT total scores of 1 and 2, the width of the 95% CIs ([.48, 7.60] and [.69, 11.00], respectively) reflected the low power of this estimate.

Discussion

The current work attempted to replicate the CPORT validation study conducted by Eke et al. (2019) with a sample of 304 individuals arrested by the Spanish National Police for CP offenses. The majority (73.4%) of the sample were arrested for CP distribution offenses at index – mostly, due to their use of non-encrypted p2p networks (63.2%) to access CP material. Each time one of these files was downloaded, a new copy was stored in the shared folder of the users, which increased the amount of CP available on the network (Soldino & Guardiola-García, 2017; Wolak et al., 2014). Similar data (i.e., 93% of p2p users were identified as CP distributors) were found by Wolak, Finkelhor, & Mitchell (2011) in a sample of 605 individuals arrested in 2006 for CP offenses in the United States. In this sense, these authors have suggested that CP offenders using p2p networks may present with different characteristics (e.g., larger CP collections including more extreme images) from those using other means to access CP.

For 83.6% ($n = 254$) of the sample, this was their first police arrest; only 6.6% had prior arrests for sexual offenses, most of which were CP offenses (4.6%). Similar data was found by Seto and Eke (2015): only 6% of the CPORT development sample had a prior CP offense.

The current study distinguished between individuals who were arrested exclusively for CP offenses and those with any other additional criminal records (either pre-index or at index). As typically defined, CP-exclusive offenders can indeed have prior non-sex offenses, but in this study these would be in the group of offenders with other criminal involvement, lumped together with individuals with pre-index or index contact sexual offenses (given the low number of individuals arrested for contact sexual offenses in our sample; $n = 7$). Consistent with Seto and Eke (2015), individuals with CP-exclusive offenses exhibited different characteristics than those who had also committed other offenses; although, some of these differences were artifacts due to sample selection (e.g., CP offenders with other criminal involvement were, by definition, a group with greater criminal versatility). CP offenders with other criminal involvement were more likely to have been arrested for production offenses (16.3%) and accessed CP material using texting (14.3%), social media (8.2%), or webcams (6.1%), as well as creating their own CP material (10.2%). These findings suggest direct (i.e., offenders who were actively part of the production and abuse that occurred within the images depicted/recorded) and indirect interaction (i.e., online sexual communication with minors) with real victims (Soldino & Guardiola-García, 2017) by CP offenders with other criminal offenses; 12.2% ($n = 6$) of the individuals included in this group were also suspected of child sexual abuse offenses at index; while 14.3% ($n = 7$) were investigated for online child grooming offenses. Furthermore, CP offenders with other criminal offenses were more likely to be arrested more than once in the past,

and had a greater percentage of prior arrests for sexual offenses (14.3%); 10.2% ($n = 5$) were previously arrested for contact sexual offenses.

The mean CPORT total score for the entire sample, regardless of missing items, was lower than the average score reported by Eke et al. (2019; mean CPORT total scores: 0.9 vs. 1.8; $p < .0001$), reaching a maximum score of 6 out of 7 when using the CASIC replacement. When analyzed separately, the percentage of individual CPORT items coded positively was, in general, lower in our sample than in Eke et al.'s (2019) validation sample. Focusing on those items without missing cases (CPORT items 1 to 4); we observed that individuals in our sample were less likely to have any prior criminal history (CPORT Item 2: 16% vs. 42%; $p < .0001$) or have failures on conditional release (CPORT Item 3: 4% vs. 17%; $p < .0001$). Furthermore, our sample included a smaller group of dual sexual offenders (i.e., individuals who were also arrested for contact sexual offense; CPORT Item 4: 2% vs. 26%; $p < .0001$). When splitting the sample into subgroups based on criminal history, CP offenders with other criminal involvement scored higher than CP-exclusive offenders on the CPORT. This difference was mostly explained by the pre-established defining differences between subgroups (i.e., CP-exclusive offenders were only arrested for CP offenses, pre-index and at index), reflected in the prior criminal history item (CPORT Item 2: 5.1% vs 75.5%; $OR = .02$) and the risk point for contact sex offenses (i.e., all individuals arrested for a contact sexual offense were included in the group of CP offenders with other criminal involvement). Furthermore, statistically significant differences between these groups were found on CPORT Items 3 (i.e., any failure on conditional release; 2.0% vs. 12.2%; $OR = .14$) and 7 (i.e., more boy in nudity/other material; 3.9% vs. 14.3%; $OR = .34$).

The current study also assessed for missing information; 97.7% ($n = 297$) of case files reviewed had no information regarding the arrestee's admission or diagnosis of sexual interest in children (CPORT Item 5). Following Eke et al. (2018), this item was coded positively when offenders admitted to police their sexual interest in children when questioned; however, this was not asked explicitly by the Spanish police officers in the majority of cases (the Spanish Criminal Code is directed toward the punishment of a single unlawful act; therefore, the motivations to commit the CP offense do not affect the penalties associated with it). Likewise, 44.4% ($n = 135$) of case files did not include information regarding other non-pornographic child content (e.g., non-erotic and non-sexualized depictions of nude children, children in stages of undress, and children fully clothed; CPORT Item 7), as it was not relevant for prosecution purposes. In 16.1% ($n = 49$) of cases, the CP content seized during the case investigation was not described in detail, nor accessible in a digital format (nevertheless, we are aware that there has been a progressive digitalization of police case files in recent years), impeding the coding of CPORT Item 6.

The difficulties encountered during the coding process of the CPORT suggest this tool may not be suitable for many practitioners who do not have access to objective information about the characteristics of the CP material used by the offender. Categorizing all pornographic and non-pornographic content is a resource extensive process that precludes many jurisdictions from collecting this type of information. Given their importance for the prediction of recidivism, we encourage law enforcement investigators to explicitly ask arrested individuals for their sexual interest in children (considering, however, the vulnerability to self-report bias; Seto & Eke, 2015), as well as ideally record all non-pornographic child content discovered during the investigation. Until other risk tools are validated on CP offenders that do not require CP content

analyses, collecting such information will enable the prediction of recidivism using the CPORT.

Consistent with prior recidivism studies (Goller et al., 2016; Krone & Smith, 2017; Osborn et al., 2010) we observed in a fixed 5-year follow-up a 2.3% sexual recidivism rate ($n = 7$): new CP offenses (2%) and new contact sexual offenses against a child (0.3%). This 5-year sexual recidivism rate was lower than the rate reported by Eke et al. (2019; 11.6%, $p < .0001$). According to our hypothesis, the legality of non-realistic depictions of fictional children (e.g., *lolicon* and *shotacon*) in Spain might result in a transition of some individuals to these legal materials. Additionally, low recidivism rates may reflect the challenges posed in detecting these crimes (especially when considering the absence of undercover virtual agents in Spain during the analyzed period). Conversely, considering the differences in the definition of recidivism (i.e., new arrests vs. charges/convictions), higher recidivism rates would have been expected in our sample; however, no statistically significant differences were found between our CP re-arrest rates (2%) and those found by Faust et al. (2015; 1.6%), both lower than Eke et al.'s CP re-conviction rates (2019; 8.4%, $p < .001$).

None of the 255 CP-exclusive offenders were arrested for any contact sexual offense during the follow-up period, and only one CP individual with prior criminal records for non-sexual offenses was arrested for a contact sexual re-offense. Likewise, none of the individuals arrested for contact sex offenses (either pre-index or at index) were arrested again for new contact sex offenses. This contrasts with the results obtained by Eke et al. (2019), who found 13 contact sexual recidivists in their combined fixed follow-up Canadian sample ($N = 346$; 4%). Our findings support prior conclusions on the lack of a direct relationship between the commission of a CP offense and the commission of subsequent contact sexual offenses (Henshaw et al., 2017).

ROC analyses (robust to base rate variations; Babchishin & Helmus, 2016) detected some predictive ability of the CPORT (small effect sizes) for CP recidivism outcomes when CASIC was used to replace missing CPORT Item 5; however, this contrasts the large effect sizes found by Seto and Eke (2017) for CPORT total scores (using CASIC substitutions). Arguably, our findings might be related to: (1) lower CP recidivism base rates in our sample (2% vs. 9%); (2) a sample composed mostly of CP-exclusive offenders (Seto and Eke reported in 2015 the inability of the CPORT to significantly predict sexual recidivism outcomes for this subgroup; AUC = .63, 95% CI [.41, .86]); (3) differences in the population itself (i.e., arrested vs. convicted offenders); (4) normal attenuation of effect sizes from development to validation samples (i.e., shrinkage; Copas, 1983); and, (5) differences in data quality/completion between the CPORT development sample (Seto & Eke, 2015) and the current sample (i.e., large amount of missing data as an explanation for null findings).

When analyzed individually, CPORT items 1 (i.e., age – under 35 at investigation), 2 (i.e., prior criminal history), and 6 (i.e., more boy CP) showed small effect sizes in predicting CP recidivism specifically; however, effect sizes for CPORT items 3 (i.e., any failure on conditional release), 4 (i.e., any contact sex offense), 5 (i.e., pedophilic/hebephilic interests, using CASIC substitution for missing items), and 7 (i.e., more boy in nudity/other material) were not statistically significant. Considering our sample as nearly homogeneous for non-contact sexual offending (only 2.3% of the sample were labeled as dual offenders; see CPORT Item 4 scoring in Table 2), these results are comparable to those found by Eke et al. (2019) when focusing only on CP non-contact offenders (i.e., AUCs for individual CPORT items were found not statistically significant among CP offenders without contact sexual offending).

Focusing on subgroup results, CPORT total scores may help predict new CP offending among CP-exclusive offenders. Specifically, CPORT items 1, 2, 5, and 6 showed small effect sizes in predicting CP recidivism among this group. However, considering that CASIC replacement for CPORT Item 5 was used in the assessment of 98% of cases in the current study, and that CASIC total scores (maximum one item missing) for CP-exclusive offenders showed a moderate effect size in predicting CP recidivism (AUC = .70), CASIC could be arguably useful as a stand-alone risk assessment tool for CP recidivism among this group (although further validation research on this end would be needed to test this hypothesis in the future). This could be related to the link between the atypical sexuality dimension and sexual recidivism (Seto, 2013; Seto & Eke, 2015); a subgroup of CP-exclusive offenders with pedophilic or hebephilic sexual interests would present higher risk for CP recidivism than those with other motivations for CP use (e.g., curiosity, accidental access; Seto & Ahmed, 2014; Seto, Reeves, & Jung, 2011).

With regard to calibration analyses, this tool under-estimated CP recidivism for CPORT total scores of 0 and overestimated CP recidivism for CPORT total scores of 1 and 2. Although no statistically significant differences were found between observed and estimated CP recidivism, the low number of observed recidivists affected the statistical power of our analyses (Hanson, 2017). Furthermore, the lack of observed recidivists with higher CPORT total scores prevented us from analyzing the calibration of higher CPORT risk categories.

Limitations and future directions

Currently, the CPORT is the only risk tool developed specifically in relation to CP offenders. The developers of the tool included probability estimates in their work and, while they do not advocate the use of these for applied risk assessment (e.g., due to

potential instability), they include them for research purposes, suggesting estimates may improve with larger samples involving greater numbers of recidivists (their combined validation sample had $N = 40$ for any sexual and $N = 29$ recidivists for CP; see Eke et al., 2019). One goal of the current work was to assess these probability estimates. In this regard, we found much lower recidivism rates than what would be expected based on the estimated recidivism rates provided by the CPORT developers (Eke et al, 2019). In this sense, we suspect the low recidivism base rate found in our sample limited our ability to detect the predictive capacity of the CPORT with sufficient statistical power and led to the instability of the calibration assessment.

Official records for recidivism tend to underestimate the real rates (Bourke & Hernandez, 2009; Seto, Hanson, & Babchishin, 2011); although, low recidivism base rates among CP offenders are not surprising, considering previous studies in the field (Eke et al., 2019, 2011; Faust et al., 2015; Goller et al., 2016; Osborn et al., 2010; Seto & Eke, 2015; Seto et al., 2011). It is possible that different forms of reinsertion and re-socialization of these offenders in different cultures could affect recidivism rates. In this sense, alternatives to custody such as suspended prison sentences have been found more effective than imprisonment in reducing recidivism (Cid, 2009) and, in our sample, only 4% were incarcerated during the follow-up period. The consideration of recidivism among CP offenders as a rare event in the Spanish context poses a challenge for the development of effective risk assessment tools. Nevertheless, further studies with larger samples and longer follow-up periods are of interest in order to test the accuracy of the CPORT, and other risk tools, in predicting sexual recidivism in Spain. Furthermore, future validation studies should include calibration to evaluate the absolute predictive capacity of risk assessment tools, considering the importance of these analyses (although commonly overlooked in validation studies; Helmus & Babchishin, 2017).

On the other hand, intercultural differences in the profile of CP offenders might result in different risk factors associated with recidivism. To this end, we encourage new CPORT validation studies in geographically and culturally different samples, which might reveal more intercultural differences between CP offenders, or provide new evidence about the external validity of the CPORT. We also recommend the exploration of possible new risk factors associated with recidivism in samples from other cultures.

A challenge for this study was also the high percentage of missing information, necessary for coding the CPORT items, which might have influenced the current validation study (e.g., the CPORT total score for some recidivists might have been higher if the information needed for scoring all CPORT items had been available). These findings suggest that police investigators should explicitly ask about those factors correlating with recidivism in this population and analyze non-pornographic child content (e.g., non-erotic and non-sexualized images of children coming from commercial sources, family albums, or legitimate sources) during home searches. Even though this information may not be probative or necessary for prosecution, it could guide treatment and supervision planning to reduce recidivism (Eke et al., 2018). Alternatively, scales that do not require detailed content analysis could also be explored for use in this population.

Additionally, no interrater reliability analyses were conducted in this study. Given the complexity of gaining access to these secure data, only one author coded all the cases. Nevertheless, discussion and consensus between academics and police investigators were involved on at least 44 cases (initially selected for discussion of the coding schemas).

Unlike the validation study by Eke et al. (2019), the characteristics of our sample (i.e., only seven out of 304 individuals engaged in contact sexual offending) prevented any discriminate analyses for dual sex offenders (i.e., CP offenders with contact sexual offending), who were instead included in the larger group of CP offenders with other criminal involvement. Future studies with larger samples are needed to analyze, specifically, the characteristics and validity of the CPORT with dual sex offenders.

Conclusion

This study presents the first CPORT cross-cultural validation in a sample of adult men arrested in Spain for CP offenses, most of which were CP-exclusive offenders (84%). Overall, the CPORT discrimination accuracy in this sample was moderate; furthermore, our sample reoffended at a rate lower than expected by the scale developers. Consequently, more evidence is required to confirm the ability of the CPORT to predict sexual recidivism outcomes in a Spanish sample. In addition, an overall lack of information needed for scoring some CPORT items prevents us, at this time, from recommending the use of this tool for applied risk assessments in Spain without further independent validation research with larger samples and policies to require additional collection efforts of information from police (e.g., admission of sexual interest, content of non-pornographic child images and videos).

Given the extremely low observed recidivism base rate, the fact that the CPORT could significantly predict CP recidivism specifically (albeit with a weak effect size) is still encouraging, especially when considering the amount of missing information in the cases reviewed. In particular, results suggest CPORT total scores (or even just CASIC total scores) might help predict new CP offending among CP-exclusive offenders arrested in Spain.

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Table 1. Analysis of sample characteristics distinguishing CP-exclusive offenders and CP offenders with other known criminal involvement either pre-index or at index

Variable	Total sample (N = 304)	CP-exclusive (n = 255; 83.9%)	CP + other offenses (n = 49; 16.1%)	OR	95% CI
CP offending (at index) ^a :					
CP accessing/possession only	15 (4.9)	12 (4.7)	3 (6.1)	.76	[.21, 2.79]
+ CP purchase	66 (21.7)	59 (23.1)	7 (14.3)	1.81	[.77, 4.23]
+ CP distribution	223 (73.4)	190 (74.5)	33 (67.3)	1.42	[.73, 2.74]
+ CP production	9 (3.0)	1 (.4)	8 (16.3)	.02	 [.003, .17]
+ Online Child Grooming	7 (2.3)	–	7 (14.3)		
+ Child prostitution	3 (1.0)	–	3 (6.1)		
+ Child Sexual Abuse	6 (2.0)	–	6 (12.2)		
+ Other ^b	7 (2.3)	–	7 (14.3)		
Access to CP (at index) ^a :					
Open forum/website	17 (5.6)	14 (5.5)	3 (6.1)	.89	[.25, 3.24]
<i>Unknown</i>	1 (.3)	1 (.4)	0 (0.0)		
Commercial website	68 (22.4)	60 (23.5)	8 (16.3)	1.58	[.70, 3.55]
Closed group trading	34 (11.2)	29 (11.4)	5 (10.2)	1.13	[.41, 3.08]
P2P ^c	192 (63.2)	163 (63.9)	29 (59.2)	1.22	[.65, 2.28]
Encrypted P2P ^c	9 (3.0)	8 (3.1)	1 (2.0)	1.55	[.19, 12.72]
Texting	14 (4.6)	7 (2.7)	7 (14.3)	.17	 [.06, .51]
<i>Unknown</i>	1 (.3)	1 (.4)	0 (0.0)		
Webcam	4 (1.3)	1 (.4)	3 (6.1)	.06	 [.01, .59]
Email	20 (6.6)	14 (5.5)	6 (12.2)	.42	[.15, 1.14]
Social media	6 (2.0)	2 (.8)	4 (8.2)	.09	 [.02, .50]
TOR ^d	2 (.7)	1 (.4)	1 (2.0)	.19	[.01, 3.07]
Own production	5 (1.6)	0 (0.0)	5 (10.2)	.02	 [.001, .29]
Other	3 (1.0)	2 (.8)	1 (2.0)	.38	[.03, 4.27]
Criminal history ^a :					
Any prior offense	50 (16.4)	13 (5.1)	37 (75.5)	.02	 [.01, .04]
Any prior violent offense	10 (3.3)	–	10 (20.4)		
<i>Unknown</i>	1 (.3)		1 (2.0)		
Any prior non-violent offense	44 (14.5)	13 (5.1)	31 (63.3)	.03	 [.01, .07]
<i>Unknown</i>	1 (.3)	0 (0.0)	1 (2.0)		
Any prior non-sexual offense	31 (10.2)	–	31 (63.3)		
Any prior sexual offense	20 (6.6)	13 (5.1)	7 (14.3)	.32	 [.12, .86]

Any prior contact sexual offense	5 (1.6)	–	5 (10.2)		
Any prior non-contact sexual offense	16 (5.3)	13 (5.1)	3 (6.1)	.82	[.23, 3.01]
Any prior CP offense	14 (4.6)	13 (5.1)	1 (2.0)	2.58	[.33, 20.18]
More than one prior offense	12 (3.9)	2 (.8)	10 (20.4)	.03	 [.01, .15]

Note. Values for sample characteristics represent frequency (n) with percentage in parentheses ($(n/N) \times 100$). Unknown data were treated as missing and removed from comparative analyses. OR = odds ratio; CI = confidence interval. Values in bold indicate statistically significant differences between groups ($p < .05$); when $OR > 1$, CP-exclusive offenders were more likely to have the characteristic than CP offenders with other criminal involvement.

^a These categories are not mutually exclusive. ^b This category included a variety of offenses related to the CP offending behavior (e.g., induction to child prostitution, threats, felonies against privacy, sexual provocation, document forgery). ^c Peer-to-peer. ^d The Onion Router.

Table 2. Fixed 5-year recidivism outcomes distinguishing CP-exclusive offenders and CP offenders with other known criminal involvement either pre-index or at index

Recidivism outcomes on the basis of new arrests: <i>n</i> (%)	Total sample (<i>N</i> = 304)	CP-exclusive (<i>n</i> = 255; 83.9%)	CP + other offenses (<i>n</i> = 49; 16.1%)	Comparison statistic
Any sexual re-offense	7 (2.3)	5 (2.0)	2 (4.1)	<i>OR</i> = .47, 95% CI [.09, 2.49]
Any contact sexual re-offense	1 (.3)	0 (0.0)	1 (2.0)	<i>OR</i> = .06, 95% CI [.003, 1.58]
Any CP re-offense	6 (2.0)	5 (2.0)	1 (2.0)	<i>OR</i> = .96, 95% CI [.11, 8.40]
Time at risk until first sexual recidivism (years): <i>M</i> (<i>SD</i>) [range]	2.9 (1.5) [.7 – 4.9]	2.9 (.7) [.7 – 4.9]	2.8 (1.2) [1.6 – 4.0]	<i>t</i> (5) = .12, <i>p</i> = .91, <i>d</i> = .10, 95% CI [-1.54, 1.73]
Overall sexual recidivism ^a : <i>n</i> (%)	12 (3.9)	9 (3.5)	3 (6.1)	<i>OR</i> = .56, 95% CI [.15, 2.15]

Note. OR = odds ratio; CI = confidence interval. ^a Recidivism outcomes on the basis of new arrests for any sexual offense, for an average follow-up period of 6.9 years.

Table 3. CPORT and CASIC scores distinguishing between CP-exclusive offenders and CP offenders with other criminal involvement

	Total sample (<i>N</i> = 304)			CP-exclusive (<i>n</i> = 255)			CP + other offenses (<i>n</i> = 49)			Comparison statistic ^a
	Cases: <i>n</i> (%)	Missing: <i>n</i> (%)	<i>M</i> (<i>SD</i>) [range]	Cases: <i>n</i> (%)	Missing: <i>n</i> (%)	<i>M</i> (<i>SD</i>) [range]	Cases: <i>n</i> (%)	Missing: <i>n</i> (%)	<i>M</i> (<i>SD</i>) [range]	
CPORT										
Item 1. Age – under 35 at investigation	116 (38.2)	0 (0.0)	–	94 (36.9)	0 (0.0)	–	22 (44.9)	0 (0.0)	–	<i>OR</i> = .72, 95% CI [.39, 1.33]
Item 2. Prior criminal history	50 (16.4)	0 (0.0)	–	13 (5.1)	0 (0.0)	–	37 (75.5)	0 (0.0)	–	<i>OR</i> = .02 , 95% CI [.01, .04]
Item 3. Any failure on conditional release	11 (3.6)	0 (0.0)	–	5 (2.0)	0 (0.0)	–	6 (12.2)	0 (0.0)	–	<i>OR</i> = .14 , 95% CI [.04, .49]
Item 4. Any contact sex offense	7 (2.3)	0 (0.0)	–	–	–	–	7 (14.3)	0 (0.0)	–	–
Item 5. Pedophilic/hebephilic interests	4 (1.3)	297 (97.7)	–	3 (1.2)	250 (98.0)	–	1 (2.0)	45 (91.8)	–	<i>OR</i> = 1.50, 95% CI [.06, 40.64]
Item 5 (after CASIC substitution)	32 (10.5)	153 (50.3)	–	24 (9.4)	128 (50.2)	–	8 (16.3)	25 (51.0)	–	<i>OR</i> = .47, 95% CI [.18, 1.22]
Item 6. More boy CP	39 (12.8)	49 (16.1)	–	30 (11.8)	41 (16.1)	–	9 (18.4)	8 (16.3)	–	<i>OR</i> = .58, 95% CI [.25, 1.34]
Item 7. More boy nudity/other material	17 (5.6)	135 (44.4)	–	10 (3.9)	122 (47.8)	–	7 (14.3)	13 (26.5)	–	<i>OR</i> = .34 , 95% CI [.12, .96]
Total score (all cases ^b)	304 (100)	0 (0.0)	.80 (.93) [0–5]	255 (100)	0 (0.0)	.61 (.05) [0–4]	49 (100)	0 (0.0)	1.82 (.17) [0–5]	<i>U</i> = 2419.00, <i>p</i> < .001, <i>r</i> = -0.42
Total score (all cases ^b , CASIC replaces missing Item 5)	304 (100)	0 (0.0)	.89 (.06) [0–6]	255 (100)	0 (0.0)	.69 (.05) [0–5]	49 (100)	0 (0.0)	1.96 (.19) [0–6]	<i>U</i> = 2423.50, <i>p</i> < .001, <i>r</i> = -0.42
Total score (no missing items)	6 (2.0)	298 (98.0)	2.00 (.68) [0–5]	4 (1.6)	251 (98.4)	1.25 (.48) [0–2]	2 (4.1)	47 (95.9)	3.50 (1.50) [2–5]	<i>t</i> (4) = -1.93, <i>p</i> = .13, <i>d</i> = 1.67, 95% CI [-.43, 3.64]
Total score (no missing items, CASIC replaces missing Item 5)	134 (44.1)	170 (55.9)	1.11 (.11) [0–6]	111 (43.5)	144 (56.5)	.86 (.10) [0–5]	23 (46.9)	26 (53.1)	2.35 (.32) [0–6]	<i>U</i> = 532.55, <i>p</i> < .001, <i>r</i> = -0.40
Total score (maximum one item missing, CASIC replaces missing Item 5)	173 (56.9)	131 (43.1)	1.09 (.91) [0–6]	138 (54.1)	117 (45.9)	.83 (.08) [0–5]	35 (71.4)	14 (28.6)	2.11 (.24) [0–6]	<i>U</i> = 1081.00, <i>p</i> < .001, <i>r</i> = -0.40

CASIC										
Item 1. Never married	136 (44.7)	55 (18.1)	–	115 (45.1)	43 (16.9)	–	21 (42.9)	12 (24.5)	–	<i>OR</i> = .90, 95% CI [.45, 1.83]
Item 2. CP videos	236 (77.6)	28 (9.2)	–	198 (77.7)	22 (8.6)	–	38 (77.6)	6 (12.2)	–	<i>OR</i> = .74, 95% CI [.27, 2.02]
Item 3. CP text stories	4 (1.3)	117 (38.5)	–	3 (1.2)	104 (40.8)	–	1 (2.0)	13 (26.5)	–	<i>OR</i> = .71, 95% CI [.07, 7.03]
Item 4. CP activity spanning ≥ 2 years	55 (18.1)	230 (75.7)	–	53 (20.8)	188 (73.7)	–	2 (4.1)	42 (85.7)	–	<i>OR</i> = 9.46 , 95% CI [1.66, 54.05]
Item 5. Volunteering with access to children	6 (2.0)	81(26.6)	–	5 (2.0)	74 (29.0)	–	1 (2.0)	7 (14.3)	–	<i>OR</i> = 1.17, 95% CI [.13, 10.24]
Item 6. Online sexual communications with minor/undercover officer	10 (3.3)	2 (.7)	–	–	–	–	10 (20.4)	2 (4.1)	–	–
Total score (all cases ^b)	304 (100)	0 (0.0)	1.47 (.05) [0–4]	255 (100)	0 (0.0)	1.47 (.05) [0–4]	49 (100)	0 (0.0)	1.49 (.12) [0–3]	<i>U</i> = 6234.00, <i>p</i> = .98, <i>r</i> = -0.001
Total score (no missing items)	41 (13.5)	263 (86.5)	2.37 (.13) [0–4]	35 (13.7)	220 (86.3)	2.34 (.14) [0–4]	6 (12.2)	43 (87.8)	2.5 (.34) [1–3]	<i>U</i> = 89.50, <i>p</i> = .54, <i>r</i> = -0.10
Total score (maximum one item missing ^c)	151 (49.7)	153 (50.3)	1.84 (.06) [0–4]	127 (49.8)	128 (50.2)	1.83 (.07) [0–4]	24 (49.0)	25 (51.0)	1.88 (.17) [1–3]	<i>U</i> = 1505.00, <i>p</i> = .92, <i>r</i> = -0.01

Note. OR = odds ratio; CI = confidence interval. Values in bold indicate statistically significant differences between groups ($p < .05$); when *OR* > 1, CP-exclusive offenders were more likely to score positively than CP offenders with other criminal involvement. ^a Missing data were removed from comparative analyses. *r* values of .10, .24, and .37 were considered small, moderate, and large effect sizes, respectively, as they roughly correspond to Cohen's *d* values of .20, .50, and .80 (Rice & Harris, 2005). ^b Regardless of missing items. ^c Except for a CASIC score of 3 or more (Eke, Helmus & Seto, 2018).

Table 4. Relative predictive accuracy of CPORT and CASIC scores for CP recidivism

	Total sample (N = 304)			CP-exclusive (n = 255)		
	n	AUC	95% CI	n	AUC	95% CI
CPORT						
Item 1. Age – under 35 at investigation	304	.560	 [.503, .617]	255	.618	 [.555, .678]
Item 2. Prior criminal history	304	.586	 [.529, .642]	255	.576	 [.513, .637]
Item 3. Any failure on conditional release	304	.518	[.461, .576]	255	.510	[.447, .573]
Item 4. Any contact sex offense	304	.512	[.454, .569]	–	–	–
Item 5. Pedophilic/hebephilic interests (CASIC replaces missing Item 5)	151	.520	[.437, .601]	127	.597	 [.506, .683]
Item 6. More boy CP	255	.578	 [.515, .640]	214	.572	 [.503, .639]
Item 7. More boy nudity/other material	169	.552	[.474, .628]	133	.539	[.450, .626]
Total score (all cases ^a)	304	.541	[.483, .598]	255	.574	 [.511, .636]
Total score (all cases ^a , CASIC replaces missing Item 5)	304	.563	 [.505, .620]	255	.555	[.492, .617]
Total score (no missing items, CASIC replaces missing Item 5)	134	.587	[.498, .671]	111	.576	[.478, .669]
Total score (maximum one item missing, CASIC replaces missing Item 5)	173	.507	[.430, .584]	138	.513	[.427, .599]
CASIC						
Item 1. Never married	249	.523	[.459, .587]	212	.606	 [.537, .672]
Item 2. CP videos	276	.574	 [.513, .633]	233	.577	 [.511, .641]
Item 3. CP text stories	187	.511	[.437, .585]	151	.510	[.428, .592]
Item 4. CP activity spanning ≥ 2 years	74	.632	 [.512, .741]	67	–	–
Item 5. Volunteering with access to children	223	.514	[.446, .581]	181	.514	[.439, .589]
Item 6. Online sexual communications with minor/undercover officer	302	.517	[.459, .574]	255	.500	[.437, .563]
Total score (all cases ^a)	304	.555	[.497, .611]	255	.527	[.464, .590]
Total score (maximum one item missing ^b)	151	.543	[.460, .624]	127	.696	 [.608, .775]

Note. An AUC value is significantly different from chance and is bolded when the 95% CI does not include 0.5. Analyses were not conducted when there was insufficient data for ROC curves (not enough individuals who committed new sexual offenses were positive for the variable). ^aRegardless of missing items. ^bExcept for a CASIC score of 3 or more (Eke, Helmus & Seto, 2018).

Table 5. Observed and predicted 5-year CP recidivism probabilities for the CPORT

Total sample	<i>n</i> (%)	<i>N</i> recidivists	Observed CP recidivism rate (%)	CP recidivism estimates (Eke et al., 2019) ^b		
				<i>n</i>	%	E/O index [95% CI] ^c
CPORT score ^a						
0	128 (42.1)	2	1.6	1.2	2	.60 [.15, 2.40]
1	115 (37.8)	2	1.7	3.8	4	1.90 [.48, 7.60]
2	40 (13.2)	2	5.0	5.5	7	2.75 [.69, 11.00]
3	12 (3.9)	0	–	6.2	12	–
4	5 (1.6)	0	–	6.8	20	–
5+	4 (1.3)	0	–	6.1	32	–
Total	304 (100)	6	2.0			

Note. ^a All cases (regardless of missing items), CASIC replaces Item 5. ^b CPORT total scores were restricted to cases with no more than one item with missing information (excluding Item 5, where CASIC scores of 3+ were used as a substitute). ^c E/O index cannot be calculated with zero expected or observed recidivists.