

Online Child Pornography Offenders are Different: A Meta-analysis of the Characteristics of Online and Offline Sex Offenders Against Children

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Abstract The current meta-analysis compared the characteristics of online child pornography-only offenders, typical (offline) sex offenders against children, and offenders with both child pornography and contact sex offences against children (mixed). Based on 30 unique samples (comparison *ns* ranging from 98 to 2,702), the meta-analysis found key differences between groups. Offenders who committed contact sex offences were more likely to have access to children than those with only child pornography offences. In contrast, offenders who used the internet to commit sexual offences had greater access to the internet than those with contact sex offenders. Differences between the groups, however, were not limited to differential opportunities. Sex offenders against children and mixed offenders were found to score higher on indicators of antisociality than online child pornography offenders (CPOs). CPOs were also more likely to have psychological barriers to sexual offending than sex offenders against children and mixed offenders (e.g., greater victim empathy). Mixed offenders were found to be the most pedophilic, even more than CPOs. The findings suggest that offenders who restricted their offending behavior to online child pornography offences were different from mixed offenders and offline sex offenders against children, and that mixed offenders were a particularly high risk group.

Keywords Sex offenders · Internet · Child pornography · Pedophilia · Paraphilias · Meta-analysis

Introduction

The internet is commonly used for sexual purposes. Approximately three quarters of men and half of women have intentionally viewed pornography over the internet (Albright, 2008). For some individuals, however, the use of the internet for sexual purposes becomes problematic and interferes with key aspects of their lives, such as career, psychological and sexual well-being, and offline intimate relationships (Brand et al., 2011; Green, Carnes, Carnes, & Weinman, 2012; Levin, Lillis, & Hayes, 2012; Putnam, 2000). In the general public, the prevalence of such problematic online sexual behaviors has been found to range from 1 to 6.5 % (Cooper, Delmonico, & Burg, 2000; Cooper, Griffin-Shelley, Delmonico, & Mathy, 2001; Daneback, Cooper, & Månsson, 2005).

A minority of individuals with problematic online sexual behaviors will commit online sexual offences (Mitchell & Wells, 2007). Criminal sexual behaviors include viewing illegal pornography, sexual solicitation of minors, prostitution, and indecent exposure. The most concerning type of internet criminal behavior victimizes children and a minority of individuals with problematic online sexual behaviors have committed such crimes. For example, 13 % of those classified as having problematic online sexual behaviors have viewed child pornography and 6 % have sexually exploited a minor (Mitchell & Wells, 2007). Many measures of problematic online sexual behavior include questions about illegal activities (e.g., Internet Sex Screening Test: Delmonico & Miller, 2003; Cybersex Addiction Screening Test: Sexual Recovery Institute, 2013) and viewing child pornography or sexually soliciting minors has been identified as one of the 10 indicators that someone may

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have problematic online sexual behaviors (Carnes, Delmonico, & Griffin, 2007). Of course, internet preoccupation is not a necessary condition for online child pornography or sexual solicitation of minors. On average, online sex offenders scored in the middle range of an internet preoccupation scale (e.g., Lee, Li, Lamade, Schuler, & Prentky, 2012). Online sex offenders, however, have greater internet preoccupation compared to typical (offline) sex offenders against children (e.g., Lee et al., 2012).

Viewing Child Pornography Over the Internet

The number of detected online sex offenders has drastically increased since the early 2000s (Dauvergne & Turner, 2010; Middleton, Mandeville-Norden, & Hayes, 2009; Wolak, 2011), as have the resources available for detecting these online sexual offences (Hamilton, 2012). Most detected online sex offenders are convicted of downloading or possessing child pornography (Wolak, 2011). There has been much debate and research examining the extent to which online child pornography offenders (CPOs) also have a history of contact sex offences against children. One reason for the expectation that online CPOs also commit contact sex offences is that the prevalence of sexual interest in children is higher among CPOs than among typical, contact sex offenders against children (Babchishin, Hanson, & Hermann, 2011). In fact, a history of child pornography offences is a valid diagnostic indicator of pedophilia (Seto, Cantor, & Blanchard, 2006).

Given that sexual interest in children is one of the best predictors of sex offences against children (e.g., Hanson & Morton-Bourgon, 2005), it would naturally follow that online CPOs would also be at risk for offline sexual offences against children. However, studies consistently find that the proportion of CPOs who reoffend with a contact sex offense is lower than the rates typically observed for sex offenders against children (Seto, Hanson, & Babchishin, 2011). Seto et al. found approximately 1 % official recidivism rates for contact sexual offences and a 3 % recidivism rate for child pornography offences after a follow-up of up to 6 years.

Not all CPOs, however, limit their sexual offending to the internet. One out of eight CPOs will have an officially recorded contact sex offense against a child, and about half will self-report committing a contact sex offense (Seto et al., 2011). Those who have both child pornography and contact offences (i.e., mixed offenders) have higher recidivism rates for contact sex offences (6 %) than offenders with solely online child pornography offences (0.2 %) (Goller, Graft, Frei, & Dittmann, 2010; Graf & Dittmann, 2011). The 5-year recidivism rate of mixed offenders (6 %) is comparable to the rate for offline sex offenders against children (13 %) (Harris & Hanson, 2004).

Are Online Child Pornography Offenders a New Type of Offender?

A parsimonious explanation of online CPOs would be that the same factors that motivate offline sexual offending also motivate online sexual offending. In addition to sexual deviancy, it is also well established that antisociality is a major risk factor of sexual offending against children (Hanson & Bussière, 1998; Quinsey, 1986; Seto, 2008, 2013). Antisociality refers to a set of personality traits and attitudes that indicate a disregard for societal norms and the safety of others, a lack of remorse, impulsivity, and persistent rule breaking (American Psychiatric Association, 2013).

Although sexual deviancy and antisociality are important motivational factors for sexual offending behaviors, not all motivated individuals commit sexual offences. One explanation for the link between motivation and actual offending is provided by routine activity theory (Cohen & Felson, 1979). This theory, now the dominant theory within criminology, posits that criminal behavior requires not only motivated offenders, but suitable targets and a lack of supervision. Applying this theory to online offenders, the largely unregulated internet environment provides both conditions (opportunity and lack of supervision) for motivated offenders to download or distribute child pornography. Indeed, the rates of online sexual crimes, and child pornography offences in particular, have increased substantially with the increasing use of the internet (Dauvergne & Turner, 2010; Middleton et al., 2009; Wolak, 2011). However, not all individuals have equal access to the internet. Internet use is positively correlated with young age, high education, and high income, as well as gender (male) and race (Caucasian) (Zickuhr & Smith, 2012).

We expected that access to the internet, in addition to antisociality and sexual deviancy, are core explanatory factors of online child pornography offences (see also Seto, 2013). Routine activity theory would posit that those motivated to commit sexual offences and who have access to the internet are those most likely to commit online sexual offences. In contrast, motivated individuals who have limited access to the internet, but have access to children, are relatively more likely to commit contact (offline) sex offences. Meanwhile, it was expected that those who were motivated to commit sexual offences and have access to both the internet and children would be mixed offenders.

There are also reasons to believe that CPOs are a distinct group of sex offenders (e.g., Babchishin et al., 2011). Specifically, the ease of access to online child pornography may contribute to a new group of offenders who succumb to temptations that they would have otherwise controlled. The association between sexual fantasy and action, however, is not absolute. Some online CPOs would be expected to restrict their offending behaviors to the internet. Indeed, despite being motivated to commit sexual offences against children (e.g., pedohebephilia), offenders who restrict their offences to online child pornography seem to have greater barriers to offending, such as less antisocial tendencies

(Long, Alison, & McManus, 2013), greater victim empathy, and greater self-control (Elliott, Beech, & Mandeville-Norden, 2012). Antisocial individuals are more likely to act out sexual fantasies involving criminal activity (e.g., sexual assault) than less antisocial individuals (Williams, Cooper, Howell, Yuille, & Paulhus, 2009) and CPOs tend to be less antisocial than contact sex offenders against children (Babchishin et al., 2011). As such, CPOs may engage in sexual fantasy about children, appreciate that it is morally wrong, and not act on it even when the opportunity presents itself (Elliott & Beech, 2009; Elliott, Beech, Mandeville-Norden, & Hayes, 2009).

Such a finding would parallel sex research in the general population. Despite half of male undergraduate students reporting at least one fantasy involving criminal sexual acts (e.g., frotteurism, voyeurism, sexual assault), the propensity to act out these fantasies was much lower (20%), with those scoring higher on psychopathy being the most likely to act out their deviant fantasies (Williams et al., 2009). The distinction between fantasy and action has also been applied to both online solicitation offenders and online CPOs. Online solicitation offenders have been divided into those who restrict their online offending behavior to the internet (fantasy-driven solicitation offenders) and those who actively set meetings with minors to act out their deviant fantasies (contact-driven solicitation offenders) (Briggs, Simons, & Simonsen, 2011). Similarly, CPOs have been divided into those who use child pornography as part of contact offences, such as victim grooming (contact-driven), and those who are motivated by deviant sexual interest without intent to commit a contact offense (fantasy-driven) (Meridian, Curtis, Thakker, Wilson, & Boer, 2013). As such, it has been hypothesized that the link between sexual fantasy and action may differ across different sex offender types.

Purpose of the Current Meta-Analysis

A better understanding of the similarities and differences between online-only, mixed, and traditional (i.e., offline-only) sex offenders against children is needed. Although there have been considerable advances in recent years, empirical and theoretical advancement on internet sexual offending has been limited by samples including offenders with different offending behaviors. Specifically, studies have combined child pornography-only offenders with sex offenders who have both contact and child pornography offences. Babchishin et al. (2011) presented the first meta-analysis that reviewed the characteristics of internet offenders. Compared to offline sex offenders, online sex offenders were more likely to have demographic characteristics correlated with internet use (e.g., Caucasian, young), greater barriers to acting out sex offences (e.g., greater victim empathy), and had greater sexual deviancy.

The meta-analysis of Babchishin et al. (2011), however, compared online sex offender groups to offline sex offender groups in general and, as such, did not examine differences within online sex offender groups. Outstanding questions remain. Are

there key differences between CPOs and offenders who commit both child pornography and contact sex offences? Are offenders who commit both online and offline sex offences different than those who solely commit contact sex offences? Since Babchishin et al. (2011), there are now additional studies available allowing for a more thorough examination of the characteristics of online sex offenders than was previously available.

Method

Study Selection

An initial collection of studies was retrieved through a previous internet sex offender meta-analysis (Babchishin et al., 2011). Online searches for additional studies were conducted through PsycINFO, Dissertations and Thesis Fulltext, National Criminal Justice Reference Service, Web of Science, and Medline using the following search terms: internet, online, cyber*, sex offend*, child molest*, child abuse imag*, imag* of child abuse, lur*, groom*, travel*, solicit*, child porn*, character*, and trait. Studies were also found by reviewing presentations given at conferences held by the Association for the Treatment of Sexual Abusers, the International Association for the Treatment of Sex Offenders, and the Congrès international francophone sur l'agression sexuelle. Additional studies were also found by reviewing the reference lists of studies, contacting researchers, and utilizing Google Scholar. The search ended January 31, 2013 and resulted in 30 eligible samples (2 French and 28 English studies).

Table 1 provides basic descriptive information for each study. Approximately half of studies were published ($k = 17$; 57%) and studies were produced between 2003 and 2013 ($Mdn = 2011$). Most offenders were sampled from the United States ($k = 9$), followed by Canada and the United Kingdom (both $k = 7$). Of the 30 unique samples, 29 reported on CPO (N ranged from 10 to 459, $Mdn = 38$, Total $N = 2,284$), 23 reported on sexual offenders against children (SOC) (N ranged from 10 to 526, $Mdn = 47$; Total $N = 2,320$), and 16 reported on mixed offenders (N ranged from 10 to 231, $Mdn = 52$; Total $N = 1,086$). Most samples grouped offenders into their respective groups based on official charges or convictions (i.e., 81% of mixed offenders, 91% of SOC, and 94% of CP offenders); some studies also used self-report and other sources, such as accusations (17% of SOC, 23% of CP, and 38% of mixed offenders). All samples were exclusively of men, and most were derived from community settings (60%; $k = 18$) or a combination of community and institutions (20%; $k = 6$).

Coding Procedure

Each study was coded with a standard list of variables and explicit coding rules (coding manual available upon request).

Table 1 Descriptive information of included samples

Study	Country	Location	N			Adversarial setting
			CPO	SOC	M	
1. Armstrong (2009)	Australia	Unknown	33	33	–	Moderate
2. Seto, Wood, Babchishin, and Flynn (2012)	United States	Combined	38	38	–	High
3. Hanson (2012)	Canada	Community	–	395	16	Moderate
4. Merdian (2012)	New Zealand	Combined	22	29	17	Low
5. Finkelhor, Wolak, and Mitchell (2008)	United States	Community	177	–	179	High
6. Finkelhor, Mitchell, and Wolak (2012)	United States	Community	288	–	231	High
7. Lopez (2008)	United States	Community	11	107	–	Moderate
8. Perrot, Benony, and Lopes (2001)	France	Unknown	14	14	–	Low
9.1 Lee et al. (2012)	Canada/United States	Combined	128	277	60	Low
9.2 Coward, Gabriel, Schuler, and Prentky (2009)						
10.1 Elliott et al. (2012)	United Kingdom	Community	459	526	142	Moderate
10.2 Elliott et al. (2009)						
11.1 Howitt and Sheldon (2007)	United Kingdom	Institution	16	25	10	Low
11.2 Sheldon and Howitt (2008)						
11.3 Sheldon and Howitt (2007)						
12. Reijnen Bulten, and Nijman (2009)	Netherlands	Community	22	47	–	Moderate
13.1 McCarthy (2010a)	United States	Community	176	–	71	Moderate
13.2 McCarthy (2010b)						
14. Matsuzawa (2009)	United States	Community	26	–	26	Moderate
15. Tomak, Weschler, Ghahramanlou-Holloway, Virden, and Nademin (2009)	United States	Combined	48	104	–	Moderate
16. Wall, Pearce, and McGuire (2011)	United Kingdom	Community	25	25	–	Low
17. Bates and Metcalf (2007)	United Kingdom	Community	112	52	–	Moderate
18.1 Neutze, Grundmann, Scherner, and Beier (2012b)	Germany	Community	129	71	144	Low
18.2 Neutze, Seto, Schaefer, Mundt, and Beier (2011)						
19. Smid, Schepers, Kamphuis, van Linden, and Barteling (2013)	Netherlands	Community	87	–	63	High
20. Magaletta, Faust, Bickart, and McLearn (2014)	United States	Institution	35	26	–	Low
21. Long et al. (2013)	United Kingdom	Community	60	–	60	High
22. Rooney (2003)	Ireland	Combined	15	15	–	Low
23. Hempel, Buck, Goethals, and van Marle (2013)	Netherlands	Combined	19	46	–	Low
24. McWhaw (2011)	Canada	Community	53	53	10	Moderate
25. Seto et al. (2006)	Canada	Community	87	178	43	High
26. Paradis and Titley (2011)	Canada	Community	24	–	14	Moderate
27. Webb, Craissati, and Keen (2007)	United Kingdom	Community	90	120	–	Moderate
28. Marshall O'Brien, Marshall, Booth, and Davis (2012)	Canada	Institution	30	28	–	Moderate
29. Jung, Ennis, Stein, Choy, and Hook (2012)	Canada	Community	50	101	–	Moderate
30. Roche, O'Reilly, Gavin, Ruiz, and Arancibia (2012)	Ireland	Institution	10	10	–	Low
		Total N	2,284	2,320	1,086	

Decimals represent overlapping samples, with 0.1 representing the main sample (i.e., the study contributing the most effect sizes)

CPO child pornography offenders, SOC sex offenders against children, M mixed offenders

The first and third author coded all studies separately and generated consensus ratings. Ratings had two components: information describing the study (one form per study) and effect size information (one form per effect size). To be included in the current meta-analysis, the study had to include

at least two of the following groups: CPO, offline SOC, or mixed offenders (i.e., committed both online and offline offences against children). Recent samples (post 2000) of CPOs were included because it was presumed that a majority of these offenders would have used the internet or other computer

technology in their offences. The study had to report on at least one of the characteristics targeted by this review, which included demographic or psychological variables. At the end of coding, only variables with three or more studies were meta-analyzed. The study also needed to include sufficient statistical information to calculate an effect size (Cohen's d).

Interrater Reliability

Interrater reliability analyses were based on 17 studies. The raters coded 456 common effect sizes, with high levels of agreement (absolute intra-class correlation [ICC] based on single rater = 0.94). Fourteen effect sizes were identified by one rater but not the other. Interrater reliability for items was first examined for all variables in the coding manual (although not all are reported in the current meta-analysis). Of the variables reported in the current meta-analysis, interrater reliability ranged from 78 to 100 % agreement for categorical variables ($Mdn = 94\%$, $n = 13$; κ ranged from 0.65 to 1.00, $Mdn = 0.89$, $n = 9$) and ICC values ranged from 0.97 to 1.00 for continuous variables ($Mdn = 0.999$; $n = 4$).

Overview of Analyses

Effect Size

The effect size indicator was the standardized mean difference, Cohen's d , defined as follows: $d = (M_1 - M_2)/S_w$, where M_1 and M_2 were the group means, and S_w was the pooled-within SD (Hasselblad & Hedges, 1995). As a heuristic for interpretation, Cohen (1988) suggested that a d of 0.2 is small, 0.5 is moderate, and 0.8 is large.

Aggregation of Findings

Findings across studies were aggregated using fixed-effect and random-effects meta-analysis (Borenstein, Hedges, Higgins, & Rothstein, 2009). Whereas the results of fixed-effect meta-analysis are conceptually restricted to the particular set of studies included in the meta-analysis, random-effects meta-analysis estimates effects for the population of which the current sample of studies is a part. When variability across studies is low ($Q < \text{degrees of freedom}$), random-effects and fixed-effect meta-analysis produce identical results. When the analysis includes a small number of studies ($k < 30$), greater interpretation weight should be given to fixed-effect rather than random-effects analyses because the between-study variability estimate necessary for random-effects analyses (i.e., tau) loses precision (Schulze, 2007).

To test the variability of findings across studies, we used Cochran's Q statistic and the I^2 statistic (Borenstein et al., 2009). The Q statistic provides a significance test for variability, whereas the I^2 is a measure of effect size for variability and can, therefore, be

compared across analyses. As a rough heuristic, I^2 values of 25, 50, and 75 % can be considered low, moderate, and high variability, respectively (Higgins, Thompson, Deeks, & Altman, 2003).

Following Hanson and Morton-Bourgon (2009), a finding was considered an outlier if it was the single extreme value and accounted for more than 50 % of the total variance (Q), and the overall variability (Q) was significant. When outliers were identified, results are presented both with and without the outlier, with the main interpretation focusing on the findings with the outlier removed. The exception is that if an analysis of three studies identified one study as an outlier, it was not removed (with so few studies, identifying outliers produces unstable results).

Results

CPO are Different from SOC

Tables 2, 3, 4, 5, and 6 compared CPO to SOC, with comparisons based on 3–18 studies (N ranging from 183 to 2,702; $Mdn = 735$). SOC were found to have greater access to children ($d = 0.53$) than CPO. In turn, CPO had a greater number of indicators of internet use compared to SOC, such as younger age ($d = -0.21$), higher income ($d = 0.60$), and higher education ($d = 0.77$) (see Table 3).

Child pornography offender were also found to have greater sexual deviancy ($d = -0.37$ for pedophilia), but greater barriers to offending compared to SOC. For example, SOC had greater cognitive distortions (e.g., $d = 0.49$), victim empathy deficits ($d = 0.53$), and emotional identification with children ($d = 0.20$) than CPO. In addition, SOC endorsed a greater number of indicators of antisociality compared to CPO, such as greater number of prior offences ($d = 0.39$), higher scores on measures of antisociality ($d = 0.58$), and greater problems with supervision compared to CPO ($d = 0.74$).

There were some notable differences in relationship variables. For example, SOC were more likely to have a detached approach to romantic relationships ($d = 0.28$), but less likely to have problems with sexual preoccupation ($d = -0.39$) and sexual self-regulation compared to CPO ($d = -0.19$). Apart from SOC having greater indicators of severe mental illness (e.g., schizophrenia) than CPO ($d = 0.26$), the two groups were found to be relatively similar in psychological profiles. SOC, however, had consistently greater childhood difficulties and abuse compared to CPO (see Table 6).

CPO are Different from Mixed Offenders

Tables 7, 8, and 9 compared CPO to sex offenders against children who also had an online offense (mixed offenders), with comparisons based on 3–13 studies (n ranging from 98 to

Table 2 Meta-analysis comparing child pornography offenders (CPOs) to sex offenders against children on sexual offending variables

Variable	Fixed-effect		Random-effects		<i>Q</i>	<i>I</i> ²	<i>n</i> (<i>k</i>)	Studies
	<i>d</i>	[95 % CI]	<i>d</i>	[95 % CI]				
Prior sexual offences	0.53	[0.39, 0.67]	0.58	[0.30, 0.86]	20.06**	65.1	1,807 (8)	2, 4, 10.2, 16, 17, 24, 27, 29
Prior sexual offences ^a	0.63	[0.48, 0.78]	0.66	[0.47, 0.85]	7.50	20.0	1,670 (7)	2, 4, 10.2, 16, 17, 24, 27
Static risk scale	0.19	[-0.04, 0.42]	0.21	[-0.13, 0.55]	4.11	51.3	410 (3)	2, 27, 29
Other risk scale	0.42	[0.20, 0.64]	0.09	[-0.78, 0.96]	24.94***	92.0	409 (3)	7, 18.2, 27
Any paraphilia	-0.18	[-0.35, -0.01]	-0.12	[-0.53, 0.28]	29.41***	79.6	735 (7)	2, 11.2, 18.1, 23, 24, 25, 30
Pedohebephilia	-0.18	[-0.36, -0.005]	-0.18	[-0.60, 0.24]	28.72***	79.1	735 (7)	2, 11.2, 18.1, 23, 24, 25, 30
Pedophilia	-0.21	[-0.42, 0.003]	-0.16	[-0.69, 0.38]	22.13**	81.9	633 (5)	2, 18.1, 24, 25, 30
Pedophilia ^a	-0.37	[-0.60, -0.14]	-0.39	[-0.83, 0.06]	9.02*	66.8	532 (4)	2, 18.1, 25, 30
Cognitive distortions	0.40	[0.29, 0.51]	0.32	[-0.04, 0.69]	24.11***	79.3	1,550 (6)	4, 10.1, 11, 17, 18.1, 27
Cognitive distortions ^a	0.49	[0.37, 0.61]	0.45	[0.14, 0.77]	7.86	49.1	1,349 (5)	4, 10.1, 11, 17, 27
Victim empathy deficits	0.53	[0.42, 0.65]	0.44	[-0.07, 0.94]	17.32**	88.4	1,255 (3)	10.1, 17, 18.1
Emotional ID with children	0.20	[0.08, 0.31]	0.15	[-0.08, 0.38]	6.76	40.8	1,264 (5)	2, 4, 10.1, 17, 18.2
Minimization	0.21	[-0.09, 0.51]	0.21	[-0.09, 0.51]	1.79	0.0	183 (3)	4, 20, 29
Access to children								
Access to minors	0.53	[0.40, 0.65]	0.65	[0.40, 0.65]	6.02	0.0	1,583 (6)	2, 4, 7, 10.1, 12, 16, 18.1, 23
Has children	0.53	[0.40, 0.66]	0.54	[0.39, 0.69]	6.32	5.0	1,510 (7)	4, 7, 10.1, 12, 16, 18.1, 23

A positive *d* indicates that sex offenders against children had more characteristics that were inherently problematic (e.g., paraphilia) or risk relevant (e.g., access to minors). Bolded values indicate that group differences were statistically significant, $p < .05$. Static risk scales were specific to sex offenders (e.g., Risk-Matrix 2000 and Static-99). Other risk scales included those created by clinicians or developed for the purpose of the study to assess risk of sexual recidivism. Indented variables with distinct names (e.g., pedohebephilia) represent subcategories (e.g., any paraphilia)

ID identification

^a One outlier removed

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

2,638; $Mdn = 955$). As expected, there were no differences in demographic variables associated with internet use (see Table 7). Mixed offenders, however, were found to have greater sexual interest in children (pedohebephilia) than CPO ($d = 0.50$). In addition to having greater paraphilic interests ($d = 0.18$), mixed offenders also had greater access to children than CPO ($d = 0.32$).

Mixed offenders also had fewer barriers to breaking the law compared to CPOs: more prior violent offences ($d = 0.94$), more unemployed ($d = 0.26$), and had greater substance abuse problems ($d = 0.35$; see Table 8). Mixed offenders, however, were less likely than CPO to participate in pedophilic social network or to have other negative social influences ($d = -0.40$).

There were relatively few differences in the general psychological variables sampled in the current meta-analysis. In terms of relationship variables, mixed offenders were found to have greater likelihood of low commitment sex (e.g., frequent partners) ($d = 0.73$), have greater sexual regulation problems ($d = 0.30$), and were more likely to report a homosexual or bisexual orientation ($d = 0.64$). Mixed offenders were also more likely to have childhood difficulties compared to CPOs (see Table 9).

Mixed Offenders are Different from SOC

Tables 10 and 11 compared SOC to mixed offenders, with comparisons based on 3–7 studies (n ranging from 297 to 1,664; $Mdn = 682$). Compared to SOC, mixed offenders had significantly greater sexual interest in children ($d = 0.78$), less access to children, and a greater number of indicators of internet use (e.g., higher education, $d = -0.39$). SOC and mixed offenders scored similarly on indicators of antisociality. When differences were observed, SOC tended to hold more indicators of antisociality (see Table 10). Mixed offenders, however, tended to have greater empathy deficits ($d = 0.37$) and tended to score lower on impression management compared to SOC ($d = -0.21$).

Table 11 shows group differences on relationship, psychological, and childhood variables between mixed offenders and SOC. There were relatively few differences in relationship variables with the exception that mixed offenders were more likely to report a homosexual or bisexual orientation ($d = 0.61$) and greater intimacy deficits than SOC ($d = 0.40$). Lastly, psychological and childhood variables sampled in the current meta-analysis did not distinguish SOC and mixed offenders, with the exception that mixed offenders

Table 3 Comparing CPOs to sexual offenders against children on internet demographics and indicators of antisociality

Variable	Fixed-effect		Random-effects		<i>Q</i>	<i>I</i> ²	<i>n</i> (<i>k</i>)	Studies
	<i>d</i>	[95 % CI]	<i>d</i>	[95 % CI]				
Access to the Internet								
Young	-0.21	[-0.28, -0.13]	-0.18	[-0.35, 0.0004]	64.93***	73.8	2,702 (18)	2, 4, 7, 8, 9.1, 10.1, 11.2, 12, 15, 16, 18.1, 20, 22, 23, 24, 27, 28, 29
Low income	0.60	[0.21, 0.99]	0.56	[-0.04, 1.16]	4.59	56.4	221 (3)	4, 7, 23
Manual labour	0.65	[0.40, 0.91]	0.69	[0.39, 0.99]	4.73	15.4	574 (5)	7, 9.1, 11.2, 16, 29
Low education	0.77	[0.64, 0.90]	0.80	[0.58, 1.02]	32.94**	57.5	1,485 (15)	1, 2, 4, 7, 9.1, 11.1, 12, 16, 17, 18.1, 20, 22, 23, 24, 29
Racial minority	0.74	[0.51, 0.96]	0.80	[0.48, 1.1]	13.64	41.3	1,058 (9)	1, 2, 4, 7, 9.1, 12, 15, 20, 27
Internet preoccupation	-1.16	[-1.40, -0.92]	-1.47	[-2.24, -0.70]	5.57	64.1	352 (3)	4, 9.1, 22
Indicators of antisociality								
Antisociality	0.63	[0.49, 0.78]	0.56	[0.24, 0.88]	21.54***	76.8	853 (6)	9.1, 12, 15, 20, 27, 29
Antisociality ^b	0.58	[0.41, 0.76]	0.58	[0.41, 0.76]	2.54	0.0	571 (4)	9.1, 12, 15, 20
Any prior offences	0.46	[0.29, 0.63]	0.53	[0.23, 0.84]	19.07**	63.3	743 (8)	2, 4, 7, 11.1, 16, 17, 24, 29
Any prior offences ^a	0.39	[0.22, 0.56]	0.39	[0.21, 0.57]	6.38	5.9	702 (7)	2, 4, 7, 16, 17, 24, 29
Prior violent offences	0.22	[-0.09, 0.54]	0.28	[-0.13, 0.70]	3.56	15.8	372 (4)	2, 4, 24, 29
General empathy deficits	0.19	[0.08, 0.29]	0.09	[-0.17, 0.34]	13.71*	63.5	1,439 (6)	4, 10.1, 17, 18.1, 20, 29
<i>Callous</i>	-0.12	[-0.24, -0.01]	-0.12	[-0.24, -0.01]	1.98	0.0	1,169 (4)	4, 10.1, 20, 29
Hostility	0.25	[0.08, 0.41]	0.29	[0.06, 0.51]	7.75	35.5	810 (6)	4, 9.2, 12, 15, 20, 29
Problems with supervision	0.74	[0.40, 1.09]	0.96	[0.21, 1.71]	7.58*	73.6	387 (3)	2, 24, 27
Low self-regulation	0.10	[0.01, 0.20]	0.08	[-0.06, 0.22]	12.27	26.6	1,774 (10)	2, 4, 10.1, 12, 15, 16, 18.2, 22, 27, 29
Impulsivity	0.10	[-0.005, 0.22]	0.07	[-0.10, 0.23]	10.05	30.4	1,496 (8)	4, 10.1, 12, 15, 16, 18.2, 22, 29
Employment problems	-0.09	[-0.40, 0.23]	-0.09	[-0.40, 0.23]	0.62	0.0	205 (3)	2, 4, 29
Substance abuse	0.45	[0.25, 0.64]	0.45	[0.22, 0.68]	6.81	26.6	637 (6)	2, 7, 20, 24, 27, 29
Unemployed	0.52	[0.30, 0.74]	0.52	[0.30, 0.74]	0.71	0.0	574 (6)	1, 4, 16, 17, 18.1, 23

A positive *d* indicates that sex offenders against children had more characteristics that were risk relevant (e.g., antisociality) or statistically rare (e.g., racial minority) than CPOs. Bolded values indicate that group differences were statistically significant, $p < .05$. Indented variables with distinct names (e.g., callous) represent subcategories (e.g., general empathy deficits)

^a One outlier removed

^b Two outliers removed

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

scored lower on measures of impression management than SOC ($d = -0.21$).

Summary of Findings

Consistent with routine activity theory, offenders who commit contact sex offences were found to have greater access to children compared to those who do not commit contact offences. In contrast, online sex offenders had greater access to the internet compared to offline sex offenders against children (see Fig. 1). Mixed offenders showed similar internet access as CPOs and access to children that was intermediate between the other two groups. Compared to traditional (offline) sex offenders, online offenders were more likely to have deviant sexual interests; however, online-only offenders were more likely to have lifestyle and psychological barriers that prevent them from acting directly on these interests (e.g., lower victim access, lower antisociality, greater victim empathy) than both

SOC and mixed offenders. Compared to CPO and SOC, mixed offenders were found to have greater sexual interest in children, and were similar to SOC in antisociality (see Fig. 2).

Discussion

Routine activity theory provides a useful framework for explaining many of the observed differences between online child pornography and offline sex offenders. Our finding that, compared to online CPOs, offenders who commit contact sex offences are more likely to have access to children and less likely to have access to the internet is parsimoniously explained by assuming that motivated offenders take advantage of the opportunities available to them. In addition to access variables, however, groups also differed on certain psychological characteristics: specifically, antisociality and psychological barriers to sexual offending. Sex offenders against children and mixed

Table 4 Comparing CPOs to sexual offenders against children on romantic relationship and sex life variables

Variable	Fixed-effect		Random-effects		<i>Q</i>	<i>I</i> ²	<i>n</i> (<i>k</i>)	Studies
	<i>d</i>	[95 % CI]	<i>d</i>	[95 % CI]				
Single	-0.01	[-0.13, 0.11]	-0.07	[-0.26, 0.13]	22.30*	46.2	2,113 (13)	1, 4, 7, 10.1, 12, 16, 18.1, 20, 22, 23, 24, 27, 29
Never married	0.18	[-0.10, 0.45]	0.05	[-0.48, 0.58]	17.65**	71.7	463 (6)	1, 7, 15, 16, 20, 22
Never married ^a	0.34	[0.05, 0.64]	0.29	[-0.12, 0.69]	7.07	43.4	407 (5)	7, 15, 16, 20, 22
Never lived with a partner	-0.41	[-0.62, -0.20]	-0.58	[-1.06, -0.10]	17.13**	76.6	542 (5)	1, 2, 16, 27, 29
Never lived with a partner ^a	-0.30	[-0.52, -0.08]	-0.35	[-0.71, 0.005]	6.67	55.0	467 (4)	1, 16, 27, 29
Homosexual/bisexual	-0.07	[-0.31, 0.16]	-0.10	[-0.40, 0.21]	7.53	33.6	660 (6)	4, 7, 9.1, 11.2, 16, 18.2
Intimacy deficits	0.02	[-0.19, 0.24]	-0.02	[-0.44, 0.40]	14.11**	71.6	501 (5)	1, 2, 4, 7, 27
Intimacy deficits ^a	0.20	[-0.05, 0.44]	0.15	[-0.20, 0.50]	5.64	46.9	425 (4)	1, 4, 7, 27
Problems with sex life	-0.30	[-0.47, -0.14]	-0.24	[-0.52, 0.04]	10.21*	60.8	777 (5)	9.2, 12, 15, 16, 24
Problems with sex life ^a	-0.12	[-0.33, 0.09]	-0.12	[-0.34, 0.10]	3.16	5.0	372 (4)	12, 15, 16, 24
Detached relationship style	-0.06	[-0.22, 0.09]	0.14	[-0.23, 0.51]	21.53***	76.8	753 (6)	1, 9.2, 12, 15, 16, 22
Detached relationship style ^a	0.28	[0.06, 0.51]	0.28	[0.06, 0.51]	3.50	0.0	348 (5)	1, 12, 15, 16, 22
Low sexual regulation	-0.27	[-0.40, -0.13]	-0.34	[-0.75, 0.07]	46.56**	87.1	1,110 (7)	2, 9.2, 16, 18.1, 24, 27, 29
Low sexual regulation ^b	-0.19	[-0.33, -0.05]	-0.20	[-0.35, -0.05]	4.26	6.2	985 (5)	9.2, 18.1, 24, 27, 29
Sexual preoccupation	-0.50	[-0.64, -0.35]	-0.63	[-1.04, -0.22]	25.27**	84.2	857 (5)	2, 9.2, 18.1, 24, 29
Sexual preoccupation ^a	-0.39	[-0.54, -0.24]	-0.39	[-0.54, -0.24]	0.24	0.0	781 (4)	9.2, 18.1, 24, 29
Low commitment sex	0.06	[-0.12, 0.24]	0.005	[-0.33, 0.34]	9.16*	67.3	668 (4)	4, 9.2, 24, 29
Low commitment sex ^a	0.16	[-0.04, 0.36]	0.12	[-0.20, 0.45]	4.28	53.3	567 (3)	4, 9.2, 29

A positive *d* indicates that sex offenders against children had more characteristics that were inherently problematic (e.g., sexual preoccupation) or statistically rare (e.g., homosexuality) than CPOs. Bolded values indicate that group differences were statistically significant, $p < .05$. Indented variables with distinct names (e.g., sexual preoccupation) represent subcategories (e.g., sexual regulation)

^a One outlier removed

^b Two outliers removed

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

Table 5 Comparing CPOs to sexual offenders against children on general psychological profiles

Variable	Fixed-effect		Random-effects		<i>Q</i>	<i>I</i> ²	<i>n</i> (<i>k</i>)	Studies
	<i>d</i>	[95 % CI]	<i>d</i>	[95 % CI]				
Mental health issues	-0.04	[-0.16, 0.08]	-0.03	[-0.20, 0.14]	19.97*	44.9	1,435 (12)	4, 7, 9.1, 12, 15, 16, 17, 18.2, 22, 24, 27, 29
Mental health issues ^a	0.002	[-0.13, 0.13]	0.002	[-0.13, 0.13]	8.22	0.0	1,156 (11)	4, 7, 9.1, 15, 16, 17, 18.2, 22, 24, 27, 29
Severe mental illness	0.26	[0.05, 0.47]	0.25	[0.005, 0.49]	3.93	23.6	385 (4)	12, 15, 20, 27
Personality disorders	0.03	[-0.23, 0.29]	0.03	[-0.23, 0.29]	0.69	0.0	236 (3)	20, 27, 29
Anxiety	0.01	[-0.19, 0.21]	-0.09	[-0.52, 0.34]	20.86**	76.0	420 (6)	12, 15, 16, 20, 22, 28
Anxiety ^a	0.14	[-0.07, 0.36]	0.08	[-0.29, 0.44]	10.12*	60.5	362 (5)	12, 15, 16, 20, 22
Depression	0.01	[-0.13, 0.14]	0.05	[-0.14, 0.23]	13.61	41.2	1,115 (9)	7, 9.2, 12, 15, 16, 18.2, 20, 24, 29
General social deficits	0.10	[0.01, 0.18]	0.04	[-0.19, 0.27]	43.08***	79.1	2,207 (10)	7, 9.2, 10.1, 17, 18.1, 20, 22, 29
<i>Social deficits</i>	-0.20	[-0.40, 0.005]	-0.09	[-0.57, 0.39]	12.36	75.7	568 (4)	9.2, 20, 22, 29
Low self-esteem	-0.12	[-0.22, -0.01]	-0.25	[-0.58, 0.08]	21.58**	81.5	1,628 (5)	1, 9.2, 10.1, 17, 24
Poor coping skills	0.04	[-0.06, 0.15]	0.04	[-0.06, 0.15]	2.53	0.0	1,403 (6)	4, 10.1, 16, 18.1, 20, 29
Underassertiveness	-0.16	[-0.28, -0.05]	-0.20	[-0.39, -0.003]	3.82	21.5	1,193 (4)	10.1, 17, 20, 29
Social desirability	0.53	[0.43, 0.63]	0.52	[0.24, 0.80]	28.04**	78.6	1,720 (7)	9.1, 10.1, 12, 15, 16, 17, 27
Social desirability ^a	0.48	[0.38, 0.58]	0.40	[0.20, 0.61]	10.76	53.6	1,617 (6)	9.1, 10.1, 12, 15, 16, 17
Impression management	0.15	[0.05, 0.26]	0.07	[-0.13, 0.27]	8.41	52.4	1,483 (5)	9.1, 10.1, 16, 17, 18.2

A positive *d* indicates that sex offenders against children had more characteristics that were inherently problematic (e.g., mental health issues) than CPOs. Bolded values indicate that group differences were statistically significant, $p < .05$. Indented variables with distinct names (e.g., social deficits) represent subcategories (e.g., general social deficits)

^a One outlier removed

* $p < .05$; ** $p < .01$

Table 6 Comparing CPOs to sexual offenders against children on childhood factors

Variable	Fixed-effect		Random-effects		<i>Q</i>	<i>I</i> ²	<i>n</i> (<i>k</i>)	Studies
	<i>d</i>	[95 % CI]	<i>d</i>	[95 % CI]				
Childhood sexual abuse	0.22	[0.04, 0.40]	0.24	[0.01, 0.46]	6.86	27.1	1,023 (6)	4, 7, 9.2, 11.2, 18.1, 27
Childhood physical abuse	0.37	[0.15, 0.59]	0.37	[0.15, 0.59]	1.92	0.0	704 (4)	4, 9.2, 11.3, 27
Family abuse in childhood	0.17	[−0.01, 0.35]	0.17	[−0.01, 0.35]	0.92	0.0	645 (4)	4, 9.1, 11.3, 27
Family neglect	0.15	[−0.16, 0.45]	0.15	[−0.16, 0.45]	1.30	0.0	296 (3)	4, 11.3, 27
Family disruption	0.45	[0.13, 0.77]	0.45	[0.13, 0.77]	3.04	1.4	397 (4)	4, 11.3, 24, 27
Conduct issues in childhood	0.39	[0.21, 0.58]	0.45	[0.18, 0.72]	8.76	43.0	922 (6)	4, 9.1, 11.3, 24, 27, 29
Juvenile delinquency	0.74	[0.44, 1.04]	0.74	[0.44, 1.04]	1.01	0.0	673 (4)	4, 9.1, 24, 29
Acting out in childhood	0.28	[0.08, 0.48]	0.29	[0.07, 0.51]	3.29	8.8	415 (4)	4, 11.3, 27, 29
Emotional difficulties in childhood	−0.02	[−0.20, 0.16]	−0.02	[−0.20, 0.16]	0.96	0.0	735 (4)	4, 9.1, 27, 29

A positive *d* indicates that sex offenders against children had more characteristics that were inherently problematic (e.g., acting out in childhood) or statistically rare (e.g., childhood sexual abuse) than CPOs. Bolded values indicate that group differences were statistically significant, $p < .05$. Family disruption is defined as any family disruption in childhood outside of neglect or abuse, and includes divorce, substance abuse by parents, and being sent to foster care. Indented variables with distinct names (e.g., family neglect) represent subcategories (e.g., family abuse in childhood)

Table 7 Meta-analysis comparing child pornography to mixed offenders on indicators of offending and internet demographics

Variable	Fixed-effect		Random-effects		<i>Q</i>	<i>I</i> ²	<i>n</i> (<i>k</i>)	Studies
	<i>d</i>	[95 % CI]	<i>d</i>	[95 % CI]				
Sex offending variables								
Prior sexual offences	0.85	[0.66, 1.04]	0.90	[0.43, 1.38]	37.72***	81.4	1,522 (8)	4, 5, 6, 13.1, 19, 21, 24, 26
Prior sexual offences ^a	1.12	[0.90, 1.35]	1.06	[0.65, 1.47]	17.40**	65.5	1,402 (7)	4, 5, 6, 13.1, 19, 24, 26
Any paraphilia	0.18	[0.05, 0.30]	0.19	[0.04, 0.35]	9.12	23.2	1,577 (8)	4, 5, 6, 11.2, 13.1, 18.1, 25, 26
Pedohebephilia	0.25	[0.08, 0.42]	0.37	[0.07, 0.67]	12.63*	52.5	1,478 (7)	4, 5, 6, 11.2, 13.1, 18.1, 25
Pedohebephilia ^a	0.50	[0.26, 0.73]	0.50	[0.26, 0.73]	4.22	0.0	1,205 (6)	4, 5, 6, 11.2, 13.1, 24
Pedophilia	0.30	[0.12, 0.48]	0.37	[0.07, 0.66]	7.79	48.7	1,414 (5)	5, 6, 13.1, 18.1, 25
Other paraphilia	0.11	[−0.04, 0.26]	0.11	[−0.04, 0.26]	0.85	0.0	1,184 (5)	5, 6, 11.2, 18.1, 26
Cognitive distortions	0.31	[0.18, 0.45]	0.26	[−0.09, 0.62]	15.88**	74.8	1,175 (5)	4, 10.1, 11.1, 13.1, 18.1
Cognitive distortions ^a	0.14	[−0.03, 0.31]	0.12	[−0.13, 0.38]	3.72	19.4	902 (4)	4, 10.1, 11.1, 13.1
Emotional ID with children	0.15	[−0.01, 0.32]	0.15	[−0.01, 0.32]	0.20	0.0	728 (3)	4, 10.1, 18.2
Access to children								
Access to minors	0.32	[0.21, 0.43]	0.33	[0.12, 0.54]	22.65**	64.7	2,309 (9)	4, 5, 6, 10.1, 13.1, 18.1, 19, 21, 26
Lived with children	0.43	[0.26, 0.59]	0.42	[0.22, 0.62]	2.86	30.0	984 (3)	5, 6, 21
Has children	0.23	[0.12, 0.34]	0.21	[0.02, 0.40]	16.30**	57.0	2,129 (8)	4, 5, 6, 10.1, 13.1, 18.1, 21, 26
Has children ^a	0.13	[0.004, 0.26]	0.13	[−0.02, 0.29]	7.73	22.4	1,610 (7)	4, 5, 10.1, 13.1, 18.1, 21, 26
Access to the internet								
Young	−0.04	[−0.13, 0.04]	−0.04	[−0.15, 0.06]	15.37	21.9	2,638 (13)	4, 5, 6, 9, 10.1, 11.2, 13.1, 14, 18.1, 19, 21, 24, 26
Low income	0.14	[−0.06, 0.35]	0.08	[−0.25, 0.41]	4.41	54.6	771 (3)	4, 5, 6
Manual labour	0.02	[−0.21, 0.25]	0.02	[−0.21, 0.25]	1.95	0.0	652 (4)	5, 9, 11.2, 19
Low education	0.10	[−0.04, 0.24]	0.13	[−0.06, 0.31]	11.35	29.5	1,197 (9)	1, 4, 5, 9, 11.1, 13.1, 14, 18.1, 24
Racial minority	0.11	[−0.14, 0.37]	0.11	[−0.14, 0.37]	4.96	0.0	1,369 (6)	4, 5, 6, 9, 13.1, 14

A positive *d* indicates that mixed offenders had more characteristics that were inherently problematic (e.g., pedophilia), risk relevant (e.g., access to minors) or statistically rare (e.g., racial minority) than CPOs. Bolded values indicate that group differences were statistically significant, $p < .05$. Indented variables with distinct names (e.g., pedohebephilia) represent subcategories (e.g., any paraphilia)

ID identification

^a One outlier removed

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

Table 8 Meta-analysis comparing child pornography to mixed offenders on indicators of antisociality and general psychological profiles

Variable	Fixed-effect		Random-effects		<i>Q</i>	<i>I</i> ²	<i>n</i> (<i>k</i>)	Studies
	<i>d</i>	[95 % CI]	<i>d</i>	[95 % CI]				
Indicators of antisociality								
Any prior offences	0.40	[0.26, 0.54]	0.52	[0.21, 0.83]	27.29***	74.4	1,485 (8)	4, 5, 6, 11.1, 13.1, 19, 21, 24
Any prior offences ^a	0.35	[0.21, 0.49]	0.38	[0.15, 0.60]	12.32	51.3	1,422 (7)	4, 5, 6, 11.1, 13.1, 19, 21
Prior violent offences	1.20	[0.92, 1.48]	1.15	[0.66, 1.64]	8.00*	62.5	1,037 (4)	4, 5, 6, 19
Prior violent offences ^a	0.94	[0.61, 1.28]	0.94	[0.61, 1.28]	1.08	0.0	535 (3)	4, 5, 19
Negative social influences	-0.06	[-0.22, 0.10]	0.14	[-0.76, 1.04]	80.75***	96.3	895 (4)	4, 5, 6, 13.1
Negative social influences ^a	-0.40	[-0.58, -0.22]	-0.40	[-0.58, -0.22]	1.22	0.0	734 (3)	4, 5, 6
Unemployed	0.14	[-0.02, 0.29]	0.17	[-0.18, 0.51]	19.72**	74.6	1,364 (6)	1, 5, 6, 18.1, 19, 26
Unemployed ^b	0.26	[0.09, 0.44]	0.30	[0.001, 0.59]	8.83	54.7	1,008 (5)	1, 6, 18.1, 19, 26
General empathy deficits	0.08	[-0.06, 0.23]	0.10	[-0.23, 0.44]	7.07*	71.7	913 (3)	4, 10.1, 18.1
Substance abuse	0.35	[0.19, 0.50]	0.35	[0.19, 0.50]	1.98	0.0	1,143 (5)	4, 5, 6, 13.1, 26
Hostility	0.21	[-0.15, 0.56]	0.18	[-0.37, 0.74]	4.41	54.6	607 (3)	4, 6, 14
Low self-regulation	0.01	[-0.15, 0.16]	0.01	[-0.19, 0.21]	4.81	16.9	821 (5)	4, 10.1, 14, 18.2, 26
Impulsivity	0.02	[-0.14, 0.18]	0.03	[-0.21, 0.27]	4.59	34.7	784 (4)	4, 10.1, 14, 18.2
General psychological profiles								
Mental health issues	-0.08	[-0.25, 0.08]	-0.08	[-0.26, 0.10]	4.21	4.9	1,027 (5)	4, 5, 6, 14, 18.2
Depression	-0.20	[-0.42, 0.02]	-0.20	[-0.42, 0.02]	1.76	0.0	1,220 (5)	5, 6, 13.1, 14, 18.2
Low self-esteem	-0.06	[-0.23, 0.11]	-0.06	[-0.23, 0.11]	0.25	0.0	705 (3)	1, 10.1, 14
General social deficits	0.001	[-0.10, 0.10]	0.17	[-0.26, 0.60]	84.60***	94.1	1,796 (6)	4, 5, 6, 10.1, 13.1, 18.1
General social deficits ^a	-0.11	[-0.21, -0.004]	-0.09	[-0.34, 0.15]	19.83***	79.8	1,635 (5)	4, 5, 6, 10.1, 18.1
Poor coping skills	0.14	[-0.003, 0.28]	-0.02	[-0.34, 0.31]	10.70*	72.0	965 (4)	4, 10.1, 14, 18.1
Social desirability	0.11	[-0.05, 0.26]	0.08	[-0.21, 0.38]	4.97	59.7	826 (3)	9.1, 10.1, 14
Impression management	-0.03	[-0.18, 0.12]	-0.08	[-0.31, 0.15]	3.78	47.1	866 (3)	9.1, 10.1, 18.2

A positive *d* indicates that mixed offenders had more characteristics that were risk relevant (e.g., prior offences) or inherently problematic (e.g., empathy deficits) than CPOs. Bolded values indicate that group differences were statistically significant, $p < .05$. Presence of pedophilic social networks included in negative social influences. Indented variables with distinct names (e.g., impulsivity) represent subcategories (e.g., self-regulation)

^a One outlier removed

^b Two outliers removed

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

offenders were more antisocial than online CPOs. Furthermore, CPOs had the greatest number of barriers to sexual offending (e.g., greater victim empathy, fewer cognitive distortions) than sex offenders against children and mixed offenders. These findings suggest that the differences between the groups cannot be fully explained by differential opportunities.

One notable finding was that mixed offenders were the most pedophilic, even more than CPOs, who are already known for their high levels of pedophilic interests (Seto et al., 2006). Consistent with previous research (Seto et al., 2006), we found that the child pornography-only offenders were more likely to have an identified sexual interest in children compared to offline, contact sexual offenders against children. Given the high rates of pedophilia among CPOs, the even higher rate of pedophilia among the mixed offenders is striking.

These results suggest that the mixed offenders are a particularly problematic group in terms of sexual deviancy. These findings also

highlight the diversity in motivations for sexual offending against children. Pedophilia is not a necessary or sufficient condition for contact sex offences against children, with only about half of sex offenders against children being classified as pedophilic (Seto, 2008). A wide range of motivational factors has been theorized to explain child sexual offending, including impulsivity, antisociality, social deficits, and offense supportive attitudes (for review, see Ward & Beech, 2006).

The high rates of pedophilic interests in the online offender groups may at least partially be attributed to differential processing by the criminal justice system. It is difficult for police to proceed with child pornography charges unless the children portrayed are obviously physically immature. In fact, the majority of individuals arrested for child pornography have pictures depicting children under the age of 12 (Wolak, Finkelhor, & Mitchell, 2005). In contrast, individuals can be charged with sex offences against children if the victims are up to 18 years

Table 9 Meta-analysis comparing child pornography to mixed offenders on relationship and childhood variables

Variable	Fixed-effect		Random-effects		<i>Q</i>	<i>I</i> ²	<i>n</i> (<i>k</i>)	Studies
	<i>d</i>	[95 % CI]	<i>d</i>	[95 % CI]				
Relationship variables								
Never married	-0.05	[-0.19, 0.10]	-0.06	[-0.45, 0.34]	21.72**	81.6	1,143 (5)	1, 5, 6, 13.1, 14
Never married ^a	-0.16	[-0.32, -0.003]	-0.20	[-0.50, 0.10]	7.15	58.0	945 (4)	1, 5, 6, 14
Never lived with a partner	-0.21	[-0.37, -0.04]	-0.27	[-0.57, 0.03]	4.83	58.6	894 (3)	1, 5, 6
Single	0.06	[-0.05, 0.18]	0.06	[-0.05, 0.18]	3.68	0.0	2,102 (9)	4, 5, 6, 10.1, 18.1, 19, 21, 24, 26
Intimacy deficits	0.18	[-0.15, 0.51]	0.18	[-0.17, 0.52]	2.15	7.1	407 (3)	1, 4, 5
Detached relationship style	-0.20	[-0.56, 0.16]	-0.12	[-0.82, 0.59]	7.27*	72.5	140 (3)	1, 14, 26
Homosexual/bisexual	0.64	[0.38, 0.91]	0.64	[0.38, 0.91]	1.65	0.0	554 (5)	4, 5, 9.1, 11.2, 26
Low sexual regulation	0.26	[0.10, 0.43]	0.24	[-0.04, 0.51]	7.67	47.8	706 (5)	4, 6, 13.1, 18.1, 26
Low sexual regulation ^a	0.30	[0.13, 0.46]	0.30	[0.13, 0.46]	0.49	0.0	669 (4)	6, 13.1, 18.1, 26
Low commitment sex	0.73	[0.50, 0.97]	0.73	[0.50, 0.97]	2.62	0.0	399 (4)	4, 6, 13.1, 26
Childhood variables								
Childhood sexual abuse	0.35	[0.11, 0.59]	0.34	[0.01, 0.67]	6.13	34.7	622 (5)	4, 11.2, 13.1, 18, 26
Childhood physical abuse	0.57	[0.17, 0.97]	0.57	[0.17, 0.97]	0.71	0.0	210 (4)	4, 11.3, 13.2, 26
Family abuse in childhood	0.54	[0.10, 0.98]	0.54	[0.10, 0.98]	0.17	0.0	99 (3)	4, 11.3, 26
Family disruption	0.36	[-0.12, 0.85]	0.36	[-0.12, 0.85]	0.23	0.0	124 (3)	11.3, 24, 26
Conduct issues in childhood	0.44	[0.004, 0.87]	0.44	[0.004, 0.87]	0.77	0.0	98 (3)	4, 11.3, 26
Acting out in childhood	0.33	[-0.10, 0.76]	0.33	[-0.10, 0.76]	0.40	0.0	98 (3)	4, 11.3, 26

A positive *d* indicates that mixed offenders had more characteristics that were inherently problematic (e.g., detached relationship style) or statistically rare (e.g., homosexuality) than CPOs. Bolded values indicate that group differences were statistically significant, $p < .05$. Family disruption is defined as any family disruption in childhood outside of neglect or abuse, and includes divorce, substance abuse by parents, and being sent to foster care. Indented variables with distinct names (e.g., low commitment sex) represent subcategories (e.g., sexual regulation)

^a One outlier removed

* $p < .05$; ** $p < .01$

of age in some jurisdictions. Consequently, a substantial proportion of sex offenders against children would be expected to victimize children whose physical form approximated that of young adults and, thus, would be unlikely to have a pedophilic motivation to their offending. Studies directly comparing CPOs with sex offenders against prepubescent children would be informative in this debate; unfortunately, studies included in the current meta-analysis inconsistently reported the age criteria of victims. An additional limitation of the meta-analysis is that up to half of the CPOs would be expected to have undetected offline offences (Seto et al., 2011). As such, group differences would be attenuated by the probable inclusion of mixed offenders in the online child pornography group.

The finding that the online offender groups were more likely to report homosexual or bisexual orientation than the offline offenders was unexpected. This association may be related to the correlates of sexual self-regulation deficits. Individuals with paraphilic hypersexuality tend to engage in a wide range of sexual behaviors (Cantor et al., 2013), and there is some evidence that individuals with online sexual compulsions, in particular, are more likely to report a homosexual or bisexual orientation than those not meeting the criteria of online sexual compulsions (Cooper et al., 2000).

Cross-Over from Online to Offline Sexual Offences

The likelihood that identified CPOs will cross-over to contact sexual offences is a preoccupation for applied risk assessment. The existing research has found low rates of recidivism for both new contact offences and new child pornography offences (<10 %). For both outcomes, the major risk factors are related to general criminality, such as young age, prior violent offences, juvenile record, and total prior criminal history (Eke, Seto, & Williams, 2011; Seto & Eke, 2005). For child pornography recidivism, however, there is some evidence that the content of the child pornography collection may also provide information about the likelihood of recidivism; specifically, the ratio of boy to girl content (Eke & Seto, 2012).

The prominence of general criminality factors in predicting cross-over and persistence is consistent with the findings of the current meta-analysis. Among child pornography users with pedophilia, the psychological factors that differentiate those who act on their interests and those who do not should be related to propensities for rule violation. Our results also suggest that opportunity matters. Motivated offenders with access to children were those most likely to sexually assault

Table 10 Meta-analysis comparing sex offenders against children to mixed offenders on indicators of offending and internet demographics

Variable	Fixed-effect		Random-effects		<i>Q</i>	<i>I</i> ²	<i>n</i> (<i>k</i>)	Studies
	<i>d</i>	[95 % CI]	<i>d</i>	[95 % CI]				
Sex offending variables								
Prior sexual offences	-0.09	[-0.44, 0.26]	-0.06	[-0.59, 0.46]	4.27	53.2	520 (3)	3, 4, 24
Any paraphilia	0.33	[0.12, 0.54]	0.40	[0.04, 0.76]	7.37	59.3	808 (4)	3, 11.2, 18.1, 25
Pedohebephilia	0.39	[0.18, 0.59]	0.63	[0.16, 1.10]	16.66**	76.0	853 (5)	3, 4, 11.2, 18.1, 25
Pedohebephilia ^a	0.78	[0.50, 1.07]	0.78	[0.50, 1.07]	2.14	0.0	637 (4)	3, 4, 11.2, 25
Cognitive distortions	0.09	[-0.06, 0.23]	0.38	[-0.24, 0.99]	48.42***	91.7	1,296 (5)	3, 4, 10.1, 11, 18.1
Cognitive distortions ^a	0.69	[0.46, 0.92]	0.67	[0.40, 0.94]	3.61	16.9	628 (4)	3, 4, 11.1, 18.1
Emotional ID with children	-0.02	[-0.18, 0.13]	0.05	[-0.21, 0.30]	4.83	37.8	1,139 (4)	3, 4, 10.1, 18.2
Access to children								
Access to minors	-0.26	[-0.43, -0.08]	-0.22	[-0.50, 0.06]	5.70	47.4	1,228 (4)	3, 4, 10.1, 18
Has children	-0.28	[-0.47, -0.10]	-0.23	[-0.62, 0.17]	6.17*	67.6	915 (3)	4, 10.1, 18
Access to the internet								
Young	0.10	[-0.03, 0.23]	0.10	[-0.12, 0.32]	11.79	49.1	1,664 (7)	3, 4, 9.1, 10.1, 11.2, 18.1, 24
Low education	-0.39	[-0.60, -0.18]	-0.48	[-0.79, -0.16]	9.41	46.8	638 (6)	1, 4, 9.1, 11.1, 18.1, 24
Racial minority	-0.44	[-0.83, -0.05]	-0.44	[-0.83, -0.05]	2.52	0.0	726 (4)	1, 3, 4, 9.1
Antisocial indicators								
Any prior offences	-0.43	[-0.76, -0.11]	-0.51	[-1.20, 0.18]	12.69**	76.4	555 (4)	3, 4, 11.1, 24
Any prior offences ^a	-0.21	[-0.56, 0.14]	-0.20	[-0.61, 0.21]	2.64	24.1	520 (3)	3, 4, 24
Prior violent offences	0.19	[-0.26, 0.64]	0.20	[-0.26, 0.64]	0.01	0.0	520 (3)	3, 4, 24
Unemployed	-0.03	[-0.33, 0.28]	-0.02	[-0.38, 0.35]	2.36	15.4	315 (3)	1, 4, 18.1
General empathy deficits	-0.08	[-0.22, 0.07]	0.16	[-0.34, 0.66]	22.65***	86.8	1,226 (4)	3, 4, 10, 18.1
General empathy deficits ^a	0.37	[0.13, 0.61]	0.37	[0.13, 0.61]	0.79	0.0	598 (3)	3, 4, 18.1
Callous	-0.29	[-0.47, -0.12]	0.07	[-0.62, 0.77]	13.02**	84.6	1,050 (3)	3, 4, 10.1
Low self-regulation	-0.06	[-0.22, 0.10]	-0.06	[-0.22, 0.11]	3.08	2.7	1,145 (4)	3, 4, 10.1, 18.2
Impulsivity	-0.06	[-0.22, 0.09]	-0.06	[-0.22, 0.09]	2.96	0.1	1,145 (4)	3, 4, 10.1, 18.2

A positive *d* indicates that mixed offenders had more characteristics that were inherently problematic (e.g., pedohebephilia), risk relevant (e.g., access to minors) or statistically rare (e.g., racial minority) than sex offenders against children. Bolded values indicate that group differences were statistically significant, $p < .05$. Indented variables with distinct names (e.g., pedohebephilia) represent subcategories (e.g., any paraphilia)

^a One outlier removed

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

actual children whereas pedophilic offenders who frequently use computers were those most likely to view child pornography. Consequently, individuals most at risk for cross-over offences would be expected to have high levels of pedophilia, high levels of antisociality, have access to children, and have few psychological barriers to acting on their deviant impulses. Conversely, online child pornography would be expected to be low risk for contact sex offences if they score low on measures of general antisociality, have limited access to children, and have psychological barriers to committing contact sexual offences.

Almost all of the previous recidivism research with online offenders has used officially recorded offences as the outcome criteria, which would underestimate the true recidivism rate. The German Prevention Project Dunkelfeld, however, provides a rare opportunity to examine self-reported persistence of child pornography offending (Beier et al., 2009).

Child pornography-only offenders have low rates of contact sexual offences and this remains true even based on confidential self-report in a relationship of trust (e.g., 0%) (Neutze, Grundmann, Amelung et al., 2012a). In contrast, the rates of self-reported child pornography use were very high both prior to and following treatment (Kuhle et al., 2012). Although child pornography offences declined at post-treatment, most (80%) of the treatment graduates ($n = 14$) still reported some use of sexual abuse images of children involving nudity and erotic posing. Importantly, none of these individuals had been detected by the criminal justice system. Further research studies examining predictors of self-reported child pornography reoffending would be informative and may find distinct risk factors from those predicting contact sex offences. Studies of individuals with problematic online sexual behaviors, for example, suggest that loneliness and boredom are particularly important predictors of internet

Table 11 Meta-analysis comparing sex offenders against children to mixed offenders on relationship, psychological, and childhood variables

Variable	Fixed-effect		Random-effects		<i>Q</i>	<i>I</i> ²	<i>n</i> (<i>k</i>)	Studies
	<i>d</i>	[95 % CI]	<i>d</i>	[95 % CI]				
Relationship variables								
Single	0.11	[-0.10, 0.31]	0.10	[-0.15, 0.35]	4.84	17.3	1,039 (5)	1, 4, 10.1, 18.1, 24
Intimacy deficits	0.40	[0.06, 0.74]	0.38	[-0.15, 0.91]	4.77	58.1	424 (3)	1, 3, 4
Homosexual/bisexual	0.61	[0.28, 0.94]	0.61	[0.28, 0.94]	0.56	0.0	317 (3)	4, 9, 11.2
Sexual entitlement	0.06	[-0.31, 0.42]	0.06	[-0.31, 0.42]	0.32	0.0	412 (3)	3, 4, 11.1
General psychological profiles								
Mental health issues	-0.06	[-0.41, 0.28]	-0.06	[-0.41, 0.28]	1.22	0.0	542 (3)	3, 4, 18.2
General social deficits	0.12	[-0.03, 0.27]	0.20	[-0.12, 0.52]	6.29*	68.2	1,214 (3)	3, 10.1, 18.1
Loneliness	0.11	[-0.04, 0.26]	0.18	[-0.13, 0.48]	5.82	65.7	1,220 (3)	3, 10.1, 18.1
Low self-esteem	0.01	[-0.16, 0.19]	0.06	[-0.67, 0.80]	8.46*	76.3	765 (3)	1, 4, 10.1
Poor coping skills	0.12	[-0.03, 0.27]	0.05	[-0.19, 0.29]	5.34	43.9	1,242 (4)	3, 4, 10.1, 18.1
Impression management	-0.21	[-0.35, -0.06]	-0.23	[-0.41, -0.05]	2.70	26.0	999 (3)	9, 10.1, 18.2
Childhood variables								
Child sexual abuse	-0.15	[-0.46, 0.15]	-0.15	[-0.46, 0.15]	0.10	0.0	297 (3)	4, 11.2, 18.1
Family disruptions	-0.26	[-0.64, 0.13]	-0.26	[-0.64, 0.13]	1.02	0.0	545 (4)	3, 4, 11.3, 24
Childhood conduct issues	-0.02	[-0.48, 0.44]	-0.02	[-0.48, 0.44]	0.30	0.0	530 (4)	3, 4, 11.3, 24
Juvenile delinquency	-0.04	[-0.58, 0.51]	-0.04	[-0.58, 0.51]	0.30	0.0	495 (3)	3, 4, 24

A positive *d* indicates that mixed offenders had more characteristics that were inherently problematic (e.g., loneliness) or statistically rare (e.g., child sexual abuse) than sex offenders against children. Bolded values indicate that group differences were statistically significant, $p < .05$. Family disruption is defined as any family disruption in childhood outside of neglect or abuse, and includes divorce, substance abuse by parents, and being sent to foster care. Indented variables with distinct names (e.g., loneliness) represent subcategories (e.g., general social deficits)

* $p < .05$

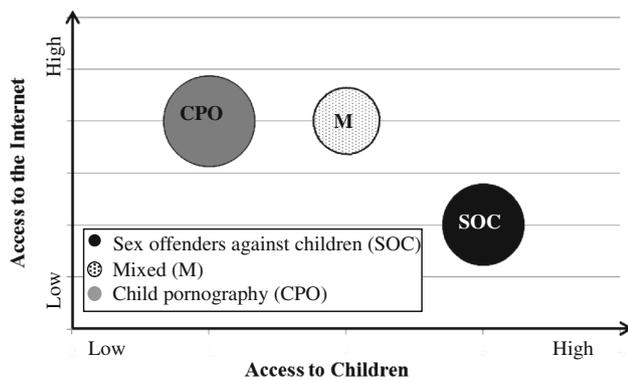


Fig. 1 Group differences on group rankings of access to children and access to the internet. The size of the bubbles was determined by total number of studies included in the meta-analysis sampling the particular group

pornography use (Chaney & Chang, 2005; Yoder, Virden III, & Amin, 2005).

Future Directions

The current meta-analysis did not find many differences in general psychological variables (e.g., anxiety, depression, self-esteem) between the online and offline sexual offender

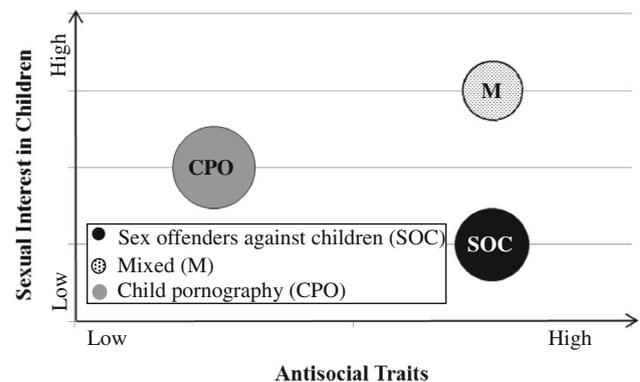


Fig. 2 Group differences based on group rankings of sexual interest in children and antisociality. The size of the bubbles was determined by total number of studies included in the meta-analysis sampling the particular group

groups. It is likely, however, that many of these factors could be correlated with diverse forms of sexual offending. For example, Babchishin et al. (2011) found no significant differences between online and offline sex offences in child sexual abuse rates; nevertheless, the absolute rates among all the sexual offender groups were substantially higher than the rates for the male population. Further comparisons between offenders and normative samples on the general psychological variables are needed before it is possible to make strong

conclusions about the contribution of these variables to online and offline sexual offending.

Similarly, research using comparison groups of individuals with non-criminal sexual behavior problems would help identify the distinctive features of online sexual offenders. Individuals with high levels of problematic sexual behaviors tend to report greater sexual sensation seeking, non-sexual sensation seeking, and sexual compulsivity (Cooper, Scherer, Boies, & Gordon, 1999). As such, it is plausible that some individuals who commit online sexual offences are positioned at the extreme high end of sexual compulsivity (Wood, 2011). However, not all online CPOs report internet or pornography addiction as reasons for viewing child pornography (Seto, Reeves, & Jung, 2010). It is likely that pedophilia is a major contributing factor in most cases of persistent child pornography use.

Conclusion

This study found that offenders who restrict their offending behavior to online child pornography offences are different from mixed offenders and sex offenders against children, and that mixed offenders (with both contact and non-contact offences) are a particularly high risk group. Given these group differences,

combining mixed offenders and child pornography-only offenders into a general child pornography sample is not desirable. Advancing our understanding of etiological and risk factors for these groups of offenders requires clear sample compositions. The current meta-analysis suggests that the management of offenders with child pornography offences within the correctional and forensic mental health system should carefully consider the existence of concomitant contact sexual offences.

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Appendix: Definition of Psychological Variables

See Table 12.

Table 12 Studies and measures analyzed for psychological meta-variables

Variable	Study	Measure
1. Static risk scale	2. Seto et al. (2012)	Static-99 and VASORS
	27. Webb et al. (2007)	RM2000C classifications
	29. Jung et al. (2012)	Modified Static-99
2. Other risk scale	7. Lopez (2008)	Self-reported risk of reoffending if the offender had not been caught
	18.2. Neutze et al. (2011)	High risk situations test
	27. Webb et al. (2007)	ACUTE-2000
3. Any paraphilia	2. Seto et al. (2012)	STABLE-2007: Deviant sexual preference item
	3. Hanson (2012)	STABLE-2007: Deviant sexual preference item
	11.2 Sheldon and Howitt (2008)	Self-reported interest in children under 16 and humiliation, force, confrontational and bestiality fantasies
3.1 Pedophebephilia	18.1 Neutze et al. (2012b)	Diagnosed with pedophilia, hebephilia, or any other paraphilia
	2. Seto et al. (2012)	Self-reported pedophebephilia
	4. Merdian (2012)	Self-reported sexual interest in children
3.1.1 Pedophilia	18.1 Neutze et al. (2012b)	Diagnosed with pedophilia or hebephilia
	2. Seto et al. (2012)	Self-reported pedophilia
	5. Finkelhor et al. (2012)	Diagnosed with pedophilia
	6. Finkelhor et al. (2008)	Diagnosed with pedophilia or hebephilia
	13.1 McCarthy (2010a)	Diagnosed with pedophilia according to DSM IV criteria
	18.1 Neutze et al. (2012b)	Diagnosed with pedophilia
	23. Hempel et al. (2013)	Implicit association test adapted to assess sexual interest in children
	24. McWhaw (2011)	PPG diagnosed pedophilia
25. Seto et al. (2006)	PPG diagnosed pedophilia	
30. Roche et al. (2012)	Implicit association test adapted to assess sexual interest in children	

Table 12 continued

Variable	Study	Measure
3.2 Other paraphilia	5. Finkelhor et al. (2012)	Evidence of paraphilia other than pedophilia
	6. Finkelhor et al. (2008)	Evidence of paraphilia other than pedophilia
	11.2 Sheldon and Howitt (2008)	Self-reported interest in children under 16 and humiliation, force, confrontational and bestiality fantasies
	18.1 Neutze et al. (2012b)	Evidence of paraphilia other than pedohebephilia
	26. Paradis and Titley (2011)	Any interest in transvestism, urophilia, coprophilia, fetishism, exhibitionism, or voyeurism.
4. Cognitive distortions	3. Hanson (2012)	STABLE-2000: Child molester attitude item
	4. Merdian (2012)	Abel-Becker Cognition Scale
	10.1 Elliott et al. (2012)	Children and Sex Cognition Questionnaire
	11.1 Howitt and Sheldon (2007)	Children and sexual activities: Sexual scale, Uncontrollable scale, and Nature of Harm scale
	13.1 McCarthy (2010a)	Presence of cognitive distortions
	17. Bates and Metcalf (2007)	Children and Sex Cognition Questionnaire
	18.1 Neutze et al. (2012b)	Bumby MOLEST scale
27. Webb et al. (2007)	STABLE-2000: Child molester attitudes	
5. General empathy		
5.1 Victim empathy deficits	10.1 Elliott et al. (2012)	Victim Empathy Distortion scale
	17. Bates and Metcalfe (2007)	Victim Empathy Distortion scale
	18.1 Neutze et al. (2012b)	Empathy for Children scale: Cognitive and Emotional Empathy subscales
5.2 Callous	3. Hanson (2012)	STABLE-2007: Lack of concern for others
	4. Merdian (2012)	Self-reported ease of lying
	10.1 Elliott et al. (2012)	Interpersonal Reactivity Index: Empathetic Concern scale
	20. Magaletta et al. (2014)	PAI: Warmth scale
	29. Jung et al. (2012)	PAI: Warmth scale
6. Emotional identification with children	2. Seto et al. (2012)	STABLE-2007: Emotional identification with children item
	3. Hanson (2012)	STABLE-2007: Emotional identification with children item
	4. Merdian (2012)	Self-reported greater comfort with children than adults
	10.1 Elliott et al. (2012)	Children and Sex Questionnaire: Emotional Congruence
	17. Bates and Metcalf (2007)	Children and Sex Questionnaire: Emotional Congruence
	18.2 Neutze et al. (2011)	Child Identification Scale: Emotional identification with children
7. Minimization	4. Merdian (2012)	Abel-Becker Cognition Scale—justification factor
	20. Magaletta et al. (2014)	PAI: Treatment Rejection scale
	29. Jung et al. (2012)	PAI: Treatment Rejection scale
8. Internet Preoccupation	4. Merdian (2012)	Self-reported loss of control/relationship/work/sleep due to internet use
	9.1 Lee et al. (2012)	Internet Preoccupation scale
	22. Rooney (2003)	Self-reported internet use was out of control
9. Antisociality	9.1 Lee et al. (2012)	Anti-social Behavior scale
	12. Reijnen et al. (2009)	MMPI: Psychopathic Deviate scale
	15. Tomak et al. (2009)	MMPI: Psychopathic Deviate scale
	20. Magaletta et al. (2014)	PAI: Antisocial Features scale
	27. Webb et al. (2007)	Psychopathy Checklist—screening version
	29. Jung et al. (2012)	PAI: Antisocial Features scale

Table 12 continued

Variable	Study	Measure	
10. Hostility	4. Merdian (2012)	Self-reported daily irritability and aggression	
	6. Finkelhor et al. (2008)	Aggressive/hostile during interview	
	9.1 Lee et al. (2012)	Self-reported anger in adulthood	
	12. Reijnen et al. (2009)	MMPI: Paranoia scale	
	14. Matsuzawa (2009)	MMPI: Aggression, Paranoia, and Cynicism scales	
	15. Tomak et al. (2009)	MMPI: Paranoia scale	
	20. Magaletta et al. (2014)	PAI: Aggression and Paranoia scales	
	29. Jung et al. (2012)	PAI: Aggression scale	
11. Problems with supervision	2. Seto et al. (2012)	STABLE-2007: Cooperation with supervision item	
	24. McWhaw (2011)	History of parole violations	
	27. Webb et al. (2007)	STABLE-2000: Cooperation with supervision item	
12. General self-regulation	3. Hanson (2012)	STABLE-2007: Impulsive and poor problem solving items	
	27. Webb et al. (2007)	STABLE 2000: General self-regulation item	
12.1 Impulsivity	3. Hanson (2012)	STABLE-2007: Impulsiveness item	
	4. Merdian (2012)	Self-reported daily risk-taking and impulsivity	
	10.1 Elliott et al. (2012)	Baratt Impulsivity Scale	
	12. Reijnen et al. (2009)	MMPI: Hypomania scale	
	14. Matsuzawa (2009)	MMPI: Disconstraint, Hypomanic Activation, and Mania scales	
	15. Tomak et al. (2009)	MMPI Hypomania scale	
	16. Wall et al. (2011)	Unspecified risk taking scale	
	18.2 Neutze et al. (2011)	NEO-FFI: Conscientiousness scale	
	22. Rooney (2003)	NEO-FFI: Conscientiousness scale	
	29. Jung et al. (2012)	PAI: Antisocial Stimulus Seeking scale	
12.2 Employment problems	2. Seto et al. (2012)	History of problems with employment	
	4. Merdian (2012)	Self-reported employment problems	
	29. Jung et al. (2012)	Problems with employment	
13. Intimacy deficits	1. Armstrong (2009)	Secure, fearful, dismissing, and preoccupied relationship styles and Fear of Intimacy scale Problems with intimate partner in the year before offending	
	2. Seto et al. (2012)	STABLE-2007: Capacity for relationship stability item	
	3. Hanson (2012)	STABLE-2007: Capacity for relationship stability item	
	4. Merdian (2012)	Self-reported problems with finding a romantic partner and problems with past relationships	
	5. Finkelhor et al. (2008)	Problems with intimate partner in the year before offending	
	7. Lopez (2008)	Self-reported satisfaction in romantic relationship	
	27. Webb et al. (2007)	STABLE-2000: Intimacy deficits (definite problem)	
	14. Problems with sex life	9.2 Coward et al. (2009)	Self-reported sexual frustration
		12. Reijnen et al. (2009)	MMPI: Masculinity/Femininity scale
		15. Tomak et al. (2009)	MMPI: Masculinity/Femininity scale
16. Wall et al. (2011)		Self-reported satisfaction with sex life	
24. McWhaw (2011)		Derogatis Sexual Functioning Inventory: Sexual Satisfaction scale	
15. Sexual self-regulation	4. Merdian (2012)	Use of child pornography to relieve stress	
	9.2 Coward et al. (2009)	Self-reported preoccupation with sex, time spent consuming pornography, and number of sexual partners	
	13.1 McCarthy (2010a)	Hours watching porn (adult or child) per week	
	16. Wall et al. (2011)	Unspecified sexual risk taking scale	
	18.1 Neutze et al. (2012b)	Lack of Coping Self-Efficacy and Sexual Preoccupation scales from Sexual Behaviour Involving Minors	
	27. Webb et al. (2007)	STABLE-2000: Sexual self-regulation item	

Table 12 continued

Variable	Study	Measure
15.1 Sexual preoccupation	2. Seto et al. (2012)	STABLE-2007: Sex drive/sexual preoccupation item
	9.1 Lee et al. (2012)	Self-reported pornography consumption and preoccupation with sex
	18.1 Neutze et al. (2012b)	Sexual Behaviour Involving Minors scale: Sexual Preoccupation
	24. McWhaw (2011)	Derogatis Sexual Functioning Inventory: Sex Drive scale
	25. Seto et al. (2006)	STABLE-2007: Sexual preoccupation item
	29. Jung et al. (2012)	Masturbates daily or more
15.2 Low commitment sex	4. Merdian (2012)	History of cheating, paying for sex, and sex tourism
	6. Finkelhor et al. (2012)	Swinging or group sex with adults
	9. Lee et al. (2012)	Number of sexual partners
	13.1 McCarthy (2010a)	Sex with strangers/prostitutes/groups, cybersex, and meeting adults online for sex
	24. McWhaw (2011)	Derogatis Sexual Functioning Inventory—Experience scale
	26. Paradis and Titley (2011)	Interest in cybersex, swinging, and prostitutes
16. Sexual entitlement	29. Jung et al. (2012)	Number of sexual partners
	3. Hanson (2012)	STABLE-2000: Sexual entitlement item
	4. Merdian (2012)	Abel-Becker Cognition Scale—Entitlement Factor
17. Detached relationship style	11.1 Howitt and Sheldon (2007)	Children and Sexual Activities Cognitive Distortions scale: Entitlement
	1. Armstrong (2009)	Dismissive relationship style
18. Mental health issues	9.2 Coward et al. (2009)	Self-reported preference for virtual rather than face-to-face communication
	12. Reijnen et al. (2009)	MMPI: Social Introversion scale
	14. Matsuzawa (2009)	MMPI: Social Introversion scale
	15. Tomak et al. (2009)	MMPI: Social Introversion scale
	16. Wall et al. (2011)	Emotional Avoidance Questionnaire
	22. Rooney (2003)	NEO–FFI: Extraversion scale
	26. Paradis and Titley (2011)	Solitary in adulthood
	3. Hanson (2012)	Ever hospitalized overnight for a psychiatric condition
	4. Merdian (2012)	Diagnosed with a mental health issue
	5. Finkelhor et al. (2012)	Diagnosed with ADHD or other mental illness
	6. Finkelhor et al. (2008)	Intelligence, ADHD, emotional problems or mental illness, and other emotional problems
	7. Lopez (2008)	ADHD, mental health counseling, and reporting an unknown disorder
	9.1 Lee et al. (2012)	Adult emotional problems (includes ADHD, rejection, and acting out)
	12. Reijnen et al. (2009)	MMPI: Hysteria scale
14. Matsuzawa (2009)	MMP: Hysteria and Demoralization scale	
15. Tomak et al. (2009)	MMPI: Hysteria scale	
16. Wall et al. (2011)	Psychological Distress scale	
17. Bates and Metcalf (2007)	Personal Distress scale	
18.2 Neutze et al. (2011)	NEO–FFI: Neuroticism scale	
22. Rooney (2003)	NEO–FFI: Neuroticism scale	
24. McWhaw (2011)	Derogatis sexual functioning inventory—symptoms	
27. Webb et al. (2007)	Contact with mental health services as an adult	
29. Jung et al. (2012)	Accessed mental health services	
19. Severe mental illness	12. Reijnen et al. (2009)	MMPI Schizophrenia scale
	15. Tomak et al. (2009)	MMPI Schizophrenia scale
	20. Magaletta et al. (2014)	PAI Schizophrenia and Mania scales
	27. Webb et al. (2007)	MCMI-III overall psychopathology
20. Personality disorder	20. Magaletta et al. (2014)	PAI: Borderline features scale
	27. Webb et al. (2007)	MCMI-III personality disorders
	29. Jung et al. (2012)	PAI: Borderline features scale

Table 12 continued

Variable	Study	Measure	
21. Anxiety	12. Reijnen et al. (2009)	MMPI: Psychastenia and Hypochondriasis scales	
	15. Tomak et al. (2009)	MMPI: Psychastenia and Hypochondriasis scales	
	16. Wall et al. (2011)	Hospital Anxiety and Depression scale: Anxiety scale	
	20. Magaletta et al. (2014)	PAI: Anxiety, Somatic Complaints, and Anxiety Related Disorder scales	
	22. Rooney (2003)	Reaction Inventory Interference scale	
22. Depression	28. Marshall et al. (2012)	Obsessive Compulsive Inventory	
	5. Finkelhor et al. (2012)	Diagnosed with depression, anxiety or suicidal thoughts and behaviors	
	6. Finkelhor et al. (2008)	Diagnosed with depression	
	7. Lopez (2008)	Diagnosed with depression and suicidal thoughts and behaviors	
	9.2 Coward et al. (2009)	Self-reported sadness in adulthood	
	12. Reijnen et al. (2009)	MMPI: Depression scale	
	13.1 McCarthy (2010a)	Diagnosed with depression	
	14. Matsuzawa (2009)	MMPI: Depression and Low Positive Emotions scales	
	15. Tomak et al. (2009)	MMPI: Depression scale	
	16. Wall et al. (2011)	Hospital Anxiety and Depression scale: Depression scale	
23. General social deficits	18.2 Neutze et al. (2011)	Allgemeine Depressionsskala (German Depression scale)	
	20. Magaletta et al. (2014)	PAI: Depression scale	
	24. McWhaw (2011)	Derogatis sexual functioning inventory—affect scale	
	29. Jung et al. (2012)	Suicidal ideation	
	23.1 Social deficits	9.2 Coward et al. (2009)	Self-reported social awkwardness/isolation in adulthood
		20. Magaletta et al. (2014)	PAI: Non-support scale
		22. Rooney (2003)	Low agreeableness assessed by NEO
		29. Jung et al. (2012)	PAI: Non-support scale
	23.2 Loneliness	3. Hanson (2012)	STABLE-2007: Social rejection item
		7. Lopez (2008)	Self-reported social isolation
9.2 Coward et al. (2009)		Self-reported loneliness	
10.1 Elliott et al. (2012)		UCLA Loneliness scale	
17. Bates and Metcalf (2007)		UCLA Loneliness scale	
18.1 Neutze et al. (2012b)		UCLA Loneliness scale	
23.3 Negative social influence (pedophilic social networks)	28. Marshall et al. (2012)	UCLA Loneliness scale	
	4. Merdian (2012)	Engaged in conversation with other child pornography users and pedophiles	
	5. Finkelhor et al. (2012)	Talked to other offenders about offending	
	6. Finkelhor et al. (2008)	Used the internet to talk to others with similar deviant interests	
	13.2 McCarthy (2010b)	Communicating with others with similar deviant interests online or in person	
24. Self-esteem	27. Webb et al. (2007)	STABLE-2000: Significant social influences item	
	1. Armstrong (2009)	Model of self	
	4. Merdian (2012)	Self-reported self-esteem issues	
	9.2 Coward et al. (2009)	Self-reported low self-esteem	
	10.1 Elliott et al. (2012)	Thorton Self-esteem Scale	
	14. Matsuzawa (2009)	MMPI: Low Self-esteem scale	
	17. Bates and Metcalf (2007)	Thorton Self-esteem scale	
	24. McWhaw (2011)	Derogatis sexual functioning inventory—body image	

Table 12 continued

Variable	Study	Measure
25. Coping skills	3. Hanson (2012)	ACUTE-2007: Emotional collapse
	4. Merdian (2012)	Self-reported difficulty coping with stress
	10.1 Elliott et al. (2012)	Interpersonal Reactivity Index: Personal Distress scale
	14. Matsuzawa (2009)	MMPI: Negative emotionality/neuroticism
	16. Wall et al. (2011)	Avoidance of positive and negative emotions
	18.1 Neutze et al. (2012b)	Coping Inventory for Stressful Situations (German version)
	20. Magaletta et al. (2014)	PAI: Stress scale
26. Underassertiveness	29. Jung et al. (2012)	PAI: Stress scale
	10.1 Elliott et al. (2012)	Social Response Inventory: Underassertiveness scale
	17. Bates and Metcalf (2007)	Social Response Inventory: Underassertiveness scale
	20. Magaletta et al. (2014)	PAI: Dominance scale
27. Social desirability	29. Jung et al. (2012)	PAI: Dominance scale
	9.1 Lee et al. (2012)	Paulhus Deception Scale: Self-deception enhancement
28. Impression management	10.1 Elliott et al. (2012)	Paulhus Deception Scale: Self-deception enhancement
	12. Reijnen et al. (2009)	MMPI: Lie scale
	14. Matsuzawa (2009)	MMPI: Lie scale
	15. Tomak et al. (2009)	MMPI: Lie scale
	16. Wall et al. (2011)	Paulhus Deception Scale: Self-deception enhancement
	17. Bates and Metcalf (2007)	Balanced Inventory of Desirable Responding: Social desirability scale
	27. Webb et al. (2007)	MCMII-III: Social Desirability scale
	9.1 Lee et al. (2012)	Paulhus Deception scale: Impression management
29. Family abuse in childhood	10.1 Elliott et al. (2012)	Paulhus Deception scale: Impression management
	16. Wall et al. (2011)	Paulhus Deception scale: Impression management
	17. Bates and Metcalf (2007)	Balanced Inventory of Desirable Responding: Impression Management scale
29.1 Family neglect	18.2 Neutze et al. (2011)	Balanced Inventory of Desirable Responding: Impression Management scale
	9.1 Lee et al. (2012)	Child Abuse scale
30. Family disruption	11.3 Sheldon and Howitt (2007)	Physical abuse in childhood, absent parent/seclusion, and witness violence in home
	26. Paradis and Titley (2011)	Physical abuse by either parent
	4. Merdian (2012)	Did not have enough food to eat as a child and did not always have a place to sleep
	11.3 Sheldon and Howitt (2007)	Absent parent/seclusion
	27. Webb et al. (2007)	Emotional/physical neglect in childhood
31. Conduct issues in childhood	3. Hanson (2012)	Left parents' care before 16 years of age
	4. Merdian (2012)	Did not live with the same adults while growing up
	11.3 Sheldon and Howitt (2007)	Separated/divorced parents, parental substance abuse, put in foster care and/or institutionalized
	24. McWhaw (2011)	Separation from parent prior to age 16
	26. Paradis and Titley (2011)	Absent parent/separated from parents
31.1 Juvenile delinquency	27. Webb et al. (2007)	Taken into local authority care
	26. Paradis and Titley (2011)	Self-reported aggressive behaviors, not being social, bullied/rejected by peer at school
31.1 Juvenile delinquency	3. Hanson (2012)	Juvenile sex offences
	4. Merdian (2012)	Self-reported criminal activity and stealing in childhood
	9.1 Lee et al. (2012)	Classified as a juvenile delinquent
	24. McWhaw (2011)	Juvenile arrests
	29. Jung et al. (2012)	Childhood aggression

Table 12 continued

Variable	Study	Measure
31.2 Acting out in childhood	4. Merdian (2012)	Missed school most of the time, skipped school, suspended or expelled from school, bullied others, run away from home, frequently lied and broke promises in childhood
	11.3 Sheldon and Howitt (2007)	Two or more behavioral or emotional problems in childhood
	26. Paradis and Titley (2011)	Self-reported not being social or bullied/rejected by peer at school
	27. Webb et al. (2007)	Two or more childhood difficulties and enrollment in special schooling
	29. Jung et al. (2012)	Elementary school maladjustment, suspended/expelled, failed grade, poor school adjustment, and teenage alcoholism
31. Emotional difficulties in childhood	4. Merdian (2012)	Bullied by others, self-harm as a child, and difficulty making friends
	9.1 Lee et al. (2012)	Childhood Emotional Problems scale
	27. Webb et al. (2007)	History of self-harm as a child
	29. Jung et al. (2012)	Evidence of childhood peer rejection

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Note. References marked with an asterisk were included in the meta-analysis.

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