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Abstract

This study examined a sample of 120 adult males convicted of offences involving indecent images of children (IIOC); 60 had a previous contact child sexual offence (dual offenders) and 60 had no evidence of an offence against a child. Analyses explored socio-demographic characteristics, previous convictions, and access to children. Of the 120 offenders, a subsample of 60 offenders (30 dual offenders and 30 non-contact) were further examined in terms of the quantity of IIOC, types of IIOC, and offending behavior. The study found the two offender groups could be discriminated by previous convictions, access to children, the number, proportion, and type of IIOC viewed. The IIOC preferences displayed within their possession differentiated dual offenders from non-contact IIOC offenders. Within group comparisons of the dual offenders differentiated sadistic rapists from sexual penetrative and sexual touching offenders. The paper suggests there may be a homology between IIOC possession, victim selection, and offending behavior. Implications for law enforcement are discussed in terms of likelihood of contact offending and assisting in investigative prioritization.

Keywords

child pornography, child sexual abuse, risk assessment, sexual abuse, sex offenses, Internet

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Introduction

Offenses relating to indecent images of children (IIOC) have dramatically risen in recent years and are now acknowledged as a global problem (Wolak, Finkelhor, & Mitchell, 2009). From a law enforcement perspective, a key focus is whether an individual using the internet to access IIOC is also committing, or is likely to go on to commit, a contact sexual offense against a child (Eke, Seto, & Williams, 2011). With finite resources, law enforcement agencies may utilize the material that individuals are accessing to assist in prioritizing which investigations take place first (McManus, Long, & Alison, 2011). In order to inform prioritization methods, it was found that prevalence rates regarding the proportion of contact sexual abusers within IIOC samples (from here on referred to as “dual offenders,” Wolak et al., 2011) require further understanding. A recent meta-analysis concluded that 12% of IIOC offenders had a historical contact offense against a child, increasing to 55% when using self-report data (Seto, Hanson, & Babchishin, 2011). Prevalence figures for contact offenses within samples of IIOC offenders have ranged from 1% (Endrass et al., 2009) to 84.5%¹ (Bourke & Hernandez, 2009).

When considering all types of criminal convictions, contact child sexual offenders were found to have more previous convictions than IIOC-only offenders (Elliott, Beech, Mandeville-Norden, & Hayes, 2009; Sheldon & Howitt, 2008). Research has reported that criminal histories, particularly those that are violent, have assisted in the prediction of contact sexual recidivism when examining IIOC offenders (Eke et al., 2011; Seto & Eke, 2005, 2008). Moreover, criminal antecedents have reported predictive abilities when examining offense behaviors for stranger rapists (Davies, Wittebrood, & Jackson, 1998), sexual offenders (Wilson & Alison, 2005), and those at risk of committing homicide (Soothill, Francis, & Liu, 2008). Notwithstanding the various prevalence rates noted, it is clear that a proportion of these offenders pose an increased risk of contact sexual abuse, and as such it is important to establish what factors, if any, may help identify them (Eke et al., 2011).

Recent studies have explored the specific relationship between possession of IIOC and contact child sexual offending (McCarthy, 2010; Osborn, Elliott, Middleton, & Beech, 2010). There are various arguments for and against the use of IIOC and the behavioral manifestation of abuse. Buschman, Wilcox, Krapohl, Oelrich, and Hackett (2010) and Sullivan (2002) proposed that the possession of IIOC acts as part of a behavioral pathway that could potentially lead to contact offending. Conversely, Riegel (2004) argued that IIOC use operates as a diversion from, or compensation for, contact offending and that the psychological barriers experienced by noncontact offenders may inhibit them from acting out their deviant sexual fantasies (Babchishin, Hanson, & Hermann, 2011; Elliott et al., 2009). Furthermore, Bourke and Hernandez (2009) proposed a “behavioral extension,” in which offenders use IIOC as an extension of their already pedophilic lifestyle.

Table 1. Levels of Child Abuse Imagery

Level	Description
1	Images depicting erotic posing with no sexual activity
2	Nonpenetrative sexual activity between children, or solo masturbation by a child
3	Nonpenetrative sexual activity between adults and children
4	Penetrative sexual activity involving a child or children, or both children and adults
5	Sadism or penetration of, or by, an animal

Defining IIOC

In the United Kingdom, amendments were made to the primary legislation resulting in the Sexual Offences Act (2003). This provides new guidance on how IIOC should be defined, based on the severity of the content (Sentencing Guidelines Council [SGC], 2007). Table 1 represents the five “types” or “levels” of IIOC (in ascending order) cited by the *Sexual Offences Act 2003: Definitive Guideline* (SGC, 2007, p. 109).

Unlike other typologies (e.g., the Combating Paedophile Information Networks in Europe [COPINE] Scale; see Taylor, Holland, & Quayle, 2001), the levels set out by the Sentencing Guidelines Council do *not* include legal images of children or material that does not depict erotic posing (but nevertheless portrays children either fully clothed or in their underwear). This is because, under U.K. law, such content is not illegal and would not be used for sentencing offenders (Beech, Elliott, Birgden, & Findlater, 2008).

Although Section 142 (1) of the Criminal Justice Act (2003) states the purposes of sentencing for all offenses, including deterrence, punishment, and rehabilitation, the guidance for IIOC offenses adopts a victim-centric approach, focusing on the quantity, levels, and ages of depicted victims (SGC, 2007). The SGC have a range of “nature of activity” (p. 113), which IIOC offenses fall under, from a “large quantity of Level 4 or 5 . . .” (p. 113) to “large amount of Level 1 . . .” (p. 114), with no further guidance as to what constitutes a “large” or “small” amount. Although offenders are sentenced on the quantity of images at the five Sentencing Advisory Panel (SAP) levels (SGC, 2007), this may not accurately assess the risk an offender poses (Carr & Hilton, 2009). Considering this, Beech et al. (2008) stated that there is little research on the relationship between categorization of IIOC and offender risk of reoffending.

Can Offenders Be Differentiated According to Their Use of IIOC?

There is a lack of research examining the differences between dual offenders (those who possess IIOC and who have committed a contact child sexual offense) and non-contact offenders (those who possess IIOC with no evidence of a contact child sexual offense) in terms of their IIOC possession (Glasgow, 2010). In further understanding IIOC possession, it is important to acknowledge trends in availability and content of

IIOC. The Internet Watch Foundation (2008) has reported a continuing severity trend in what is depicted, with 58% of websites showing images at Levels 4 and 5. In 2010, this had further increased to 65.6% (Internet Watch Foundation, 2010). In contrast, other researchers have reported that the “most serious images were the least numerous” (Gallagher, Fraser, Christmann, & Hodgson, 2006, p. 63). When examining how these SAP levels relate to offender risk, Osborn et al. (2010) found that, regardless of the risk level estimated using the Risk Matrix 2000 (RM2000) revised, no offenders sexually reoffended. Moreover, no offenders possessed IIOC at SAP Level 5. Laulik, Allam, and Sheridan (2007) reported that the SAP level had no impact on potential risk of reoffending. However, they found that the majority of their offenders possessed Level 4 or 5 IIOC, thus reducing the variance within the sample. This lack of knowledge in the availability and content of IIOC, and how possession of IIOC at any level relates to risk of harm to children, is a key issue that requires further examination and understanding (Carr & Hilton, 2009).

A recent American study (McCarthy, 2010) examined how IIOC possession relates to risk using a sample of 107 offenders (56 noncontact offenders; 51 dual offenders) convicted of IIOC offenses. McCarthy (2010) found that dual offenders were significantly more likely to possess larger IIOC collections than noncontact offenders. Dual offenders were more likely to be engaging in grooming behaviors than noncontact offenders, such as sending adult pornography to potential victims (this constitutes a different offense within the United Kingdom). Grooming, along with the production and dissemination of IIOC, has featured in various typologies of internet sexual offenders (Beech et al., 2008; McLaughlin, 2000), highlighting the different ways in which IIOC are used. Wolak et al. (2005) concluded that one in five online contact offenders produced their own IIOC themselves or convinced the victim to take photos of themselves or friends. Sheehan and Sullivan (2010) found that, although all their IIOC producers downloaded IIOC prior to producing their own images, their sexual interest in children developed prior to engaging with the internet.

Little has been written explaining why offenders may select certain imagery (Seto, Cantor, & Blanchard, 2006; Seto, Reeves, & Jung, 2010). However, previous research on adult pornography and IIOC possession suggest that individuals seek out material that is most arousing to them and reflects their sexual fantasies (Glasgow, 2010; Howitt, 1995; Seto, Maric, & Barbaree, 2001). Burgess, Hartman, Ressler, Douglas, and McCormack (1986) found that 80% of the sexual murderers in their study claimed their most common sexual fantasy related to their sexually assaultive behavior. Furthering this concept, Quayle and Taylor (2002) concluded that IIOC “preserve a child at the very age and stage of development that is most arousing to the offender” (p. 866). This suggests that the possession of IIOC may indicate the sexual preference of the offender in terms of the gender, age, and sexual action depicted (Seto et al., 2006). Thus, the behaviors exhibited by IIOC offenders may represent potential likelihood factors for contact offending that need to be further examined.

Current Study

The primary purpose of this article is to explore IIOC possession in detail, using a two-stage process. First, it examines whether there are discriminatory differences between dual and noncontact offenders in terms of their IIOC possession. To examine this, the two offender groups were compared across four key areas: (a) sociodemographic characteristics, (b) quantity of IIOC possessed, (c) types of IIOC possessed, and (d) internet activity (e.g., payment for IIOC, grooming behavior). Second, it examines whether the type of image possessed is related to the contact offense committed among dual offenders. Within group analysis of the dual offenders examined (a) the association between severity of contact offense and IIOC possessed, and (b) the relationship between contact offense victim(s) and IIOC victims. Based on previous research, the following hypotheses were tested:

Hypothesis 1: Dual offenders will possess more IIOC than noncontact offenders (McCarthy, 2010).

Hypothesis 2: Dual offenders will be more likely to engage in grooming behaviors than noncontact offenders (McCarthy, 2010)

Hypothesis 3: Dual offenders are more likely to produce (e.g., via webcam, covert filming, or recording their contact offending) their own IIOC than noncontact offenders (Sheehan & Sullivan, 2010; Wolak et al., 2005).

Hypotheses 4 through to 6 are exploratory hypotheses based on theoretical arguments:

Hypothesis 4: Dual offenders will possess higher SAP level IIOC than noncontact offenders (Burgess et al., 1986; Quayle & Taylor, 2002).

Hypothesis 5: Dual offenders will possess IIOC similar to their contact sexual offense victim in terms of age and gender (Burgess et al., 1986; Quayle & Taylor, 2002).

Hypothesis 6: The more serious the contact offense, the more severe the IIOC possessed (e.g., dual offenders will possess IIOC that reflects their sexual action preference: Howitt, 1995; Quayle & Taylor, 2002; Taylor et al., 2001).

Method

Participants

The sample consisted of 120 (60 dual and 60 noncontact) adult male IIOC offenders aged 18 years and older, who were selected through stratified opportunity sampling to ensure an equal amount of both dual and noncontact IIOC offenders. To be categorized as a dual child sexual offender, participants had to have at least one conviction within Table 2 and at least one conviction in Table 3. Noncontact offenders were required to have at least one conviction in Table 2 and no convictions, allegations, or arrests for offenses within Table 3.

Table 2. Definition of Noncontact Offender Convictions

Offence	Brief Description
Making IIOC (s.1. Protection of Children Act, 1978)	Indecent images of children (IIOC) is downloaded from the internet or photocopied from another image
Taking IIOC (s.1. Protection of Children Act, 1978)	IIOC is taken in person with a camera or remotely by webcam
Distribute IIOC (s.1. Protection of Children Act, 1978)	IIOC is sent via email, posted on a social network/newsgroup/website
Possession IIOC (s.160 of Criminal Justice Act, 1988)	IIOC is possessed with no requirement to prove any of the above

Table 3. Definition of Dual Offender Convictions

Offence	Brief Description
Rape (Sexual Offences Act, s.1 & 5)	Intentionally penetrates the vagina, anus, or mouth of a child with his penis
Assault by penetration (Sexual Offences Act, s. 2 & 6)	Intentionally penetrates the vagina or anus of a child with a part of his body or anything else
Sexual assault (Sexual Offences Act, s. 3 & 7)	Intentionally sexually touched a child

It is important to note that offenders were categorized according to their convictions and not their index offenses. Therefore, it is possible that a dual offender had a previous contact offense and a later IIOC offense. Conversely, the IIOC offense may have occurred first followed by a later conviction for a contact offense. Alternatively, the contact and IIOC offense may have resulted in both offenses convicted at the same time.

All 120 offenders were arrested between January 8, 2007 and February 25, 2011. Data collection occurred between May 2009 and August 2011. A subsample of the 120 offenders were selected using a stratified opportunistic sampling method, resulting in 60 offenders (30 dual and 30 noncontact). This subsample was used to analyze IIOC possession and internet offending behavior. They were selected according to whether they had information available on the number and levels of IIOC, and selection continued until equal numbers of dual and noncontact offenders were reached.

Detailed Examination of the Subsample (n = 60)

The number of IIOC possessed per offender ranged from 4 to 199,832, with a median of 787 ($M = 15,099.27$; $SD = 37,196.51$).² All of the offenders were found in possession of both still images and movies (e.g., the offender with four IIOC had one movie IIOC and three still IIOC). Movies were used as an inclusion criterion as Taylor et al.

(2001) suggest they are the “major contemporary primary source of child pornography” (p. 98). The current study also aimed to explore IIOC possession as a whole and any differences relating to the format of IIOC; therefore still and movie content were examined separately.

It should be noted that those offenders who displayed grooming behaviors could appear in either the dual or noncontact offender group.³ Some offenders used grooming behaviors with no contact offense committed ($n = 6$), and others displayed grooming behaviors and contact sexually abused a child ($n = 26$).

Procedure

The data were primarily provided by Kent Police but also included cases from other police forces within the United Kingdom. As part of the preparation for prosecution, investigators gather information such as the number and format of IIOC (still image or movie) and the SAP level of the IIOC possessed. This formed one set of data used in the study. Other data such as family circumstances, access to children, years accessing IIOC, previous convictions were coded from case files that included case summaries, suspect, and witness interview transcripts. Content analyses required the researchers to identify the presence or absence of variables such as access to children and the type of access.

Interrater reliability was assessed by comparing the coding of Rater 1 (third author) with Rater 2 (research assistant). For the 120 offenders, a random selection of 74 offenders (62% of sample) resulted in excellent interrater reliability (Pearson's $r = .95$ or higher for continuous variables and Kappa = .96 or higher for categorical variables). For the more detailed examination of the 60 offenders, a set of 42 offenders (70% of sample) were randomly selected for interrater reliability (Pearson's $r = .87$ or higher for continuous variables and Kappa = .88 or higher for categorical variables).

Analysis was guided by previous research suggesting factors to identify and examine. Noncontact and dual offenders were examined and compared across four key areas, outlined in turn below.

Sociodemographic Characteristics (Full Sample, $N = 120$)

Information, such as the age of offender at time of IIOC arrest, was provided as a specific date within the prosecution file. Details of relationship status and access to children were documented by the investigators as part of the police's intelligence information. When the investigators attended the home of the suspect, more information regarding the living circumstances of the offender and any other potential access to children was gained. Access to children was coded dichotomously. The type of access was also recorded under categories of (a) own children (i.e., biological, foster children), (b) familial access (i.e., the offender was a grandparent or uncle), (c) job access (e.g., school teacher), and/or (d) other access (e.g., volunteered in local children's activities, befriended local children within the area). Details of any previous convictions were coded dichotomously. The types of previous conviction were also

recorded: (a) previous IIOC offense; (b) child sexual offense, from sexual touching to rape; (c) other sexual offense such as adult sexual offenses or voyeurism; and (4) other offenses such as theft, criminal damage.

Quantity of Images Possessed (Subsample, n = 60)

As part of an indecent image investigation, each suspect's computer was digitally forensically examined for any indecent image material and any potential evidence of contact sexual abuse offenses. Any IIOC were identified and quantified by investigators assisted by the Digital Forensics Unit (DFU). DFU identified any potential IIOC that were passed to the IIOC investigators to view and assess the level of IIOC possessed. IIOC were viewed and assessed by specifically trained investigators who categorized each IIOC according to the Sentencing Guidelines seriousness criteria (see Table 1).

Some investigations included large amounts of IIOC, and categorizing of all images would be impractical (e.g., one offender in this sample possessed almost 200,000 IIOC, with 74% of his possession categorized). Therefore, all IIOC were viewed to determine whether the offender had committed direct contact offenses against a child. As a minimum, the first 20,000 IIOC were categorized using SAP levels and 10% of any IIOC above that number. Regarding the data used within this study, all offenders' IIOC had been viewed with an average of 79.6% categorized (SAP levels) by investigators.

Investigators also provided a schedule of the IIOC viewed that gave details regarding the gender, approximate age, and sexual action of a proportion of IIOC possessed. Movies were described in detail. Gender of the IIOC victim was coded as male, female, or both genders. This was gathered from the investigators who viewed the offenders' possession and gave a summary of their findings (e.g., the offender possessed more than 85% male IIOC). The schedule of information was also used to triangulate data sources, examining the gender of victims. If an offender possessed IIOC that depicted more than 80% of a particular gender, this was categorized as his IIOC gender preference. The rationale behind using this cutoff point was to reflect the general trends in the gender of IIOC in circulation, which on average ranges from 69% (Wolak et al., 2011) to 79% (Steel, 2009) of female-depicted IIOC; thus, more than 80% was deemed to reflect a sexual preference for that gender. Anything less than this resulted in the IIOC gender coded as "both genders." For age comparisons, as above, the investigator who viewed the IIOC gave an indication if there was an age preference within their possession. Again, this was confirmed by the researcher examining the schedule of information, which details each individual IIOC. Where IIOC included two or more victims, the median age was taken per IIOC. If an offender possessed IIOC depicting children with ages ranging from 5 years to 14 years, then the average age was calculated as the median (9.5 years) and the age range was 10 years.

Internet Activity (Subsample, n = 60)

Time spent downloading IIOC was measured by evidence of an offenders' first to final date (usually date of arrest) of IIOC possession. This was gathered from a

combination of offender interviews, summary reports provided by the investigator for use in court by the Crown Prosecution Services, and any digital forensic analysis of media possessed by the offender. It is acknowledged that there are limitations in using this methodology as exact dates were not gathered.

Whether an offender had paid for access to IIOC was usually part of the case file, where the offender's banking card details had been captured. In addition, all offender interviews were analyzed regarding the explanation given by offenders for their possession of IIOC. These were subjected to thematic analysis, with four key areas extracted: (a) no comment on possession; (b) positive justification, for example, to catch and report offenders to police; (c) cognitive distortion, for example, downloading IIOC does not harm the child; and (d) admit sexual attraction to IIOC. It is acknowledged that these were general categories based on the interview transcripts. No actual assessment was completed to define "cognitive distortion" other than the offender suggested that the child was somewhat complicit or that they were doing no harm to the child in possessing the IIOC.

The case file also highlighted whether evidence indicating that the offender had produced their own IIOC was recovered. This would normally be charged as taking an IIOC (see Table 2). Therefore, those offenders who took IIOC webcam footage of children were categorized as producers. An offender could be classified as either dual or noncontact and still produce their own IIOC. This is because some offenders who were convicted of taking IIOC were producing IIOC via webcam or covertly filming IIOC ($n = 8$) with no contact offense committed. Other offenders were actively part of the production and abuse that occurred within the IIOC ($n = 14$).

Grooming behavior was categorized dichotomously as well as the grooming method employed (online/offline/both). An offender was categorized as engaging in grooming behavior online if he was communicating online to a child in a way that was sexual or encouraged sexual behavior. This could be chatting in a sexual way and/or arranging/encouraging a child to meet. Offline grooming behavior included evidence that offenders who had access to a child were manipulating his or her trust in some form (whether through financial inducements or befriending a neighborhood child) to achieve sexual satisfaction. Most offenders within the sample who were coded as groomers were not convicted of grooming (Section 15 Sexual Offences Act, 2003). This was because the offense of grooming is notoriously difficult to prosecute and convict (Davidson et al., 2011).

Relationship Between IIOC Possessed by Dual Offenders and Their Contact Offense(s) (Dual Offenders With IIOC Information, $n = 30$)

Dual offenders were categorized according to the sexual action recorded within their offense using the relevant SAP levels (see Table 1). Those offenders whose contact offense involved sexual touching with no penetration were categorized as Level 3. Penetrative sexual abuse was categorized as Level 4. For those categorized as Level 5, the coding dictionary defined this as any dual offender who had penetrated their victim and exhibited one or more of the following:

- Violent rape, causing physical trauma to victim (e.g., bleeding).
- Physical abuse, such as hitting victim in commission of offense.
- Bondage, tying up victims (e.g., using rope, handcuffs).
- Evidence of enjoyment of pain inflicted (e.g., one offender produced his own IIOC movie where victims were visibly seen to be crying and in pain).

The contact victim information was also recorded (age and gender). This stated the age and gender of the child victims. If an offender committed a contact offense against a child between the ages of 13 and 15, the median age (14 years) was taken with a range of 3 years.

Data Analysis

The data set contained a variety of variables in various formats with different analyses and effect sizes used. Normality tests were conducted for each variable and, according to the results, either nonparametric or parametric tests were run. Differences between dual offenders and noncontact offenders were explored using chi-square tests for categorical data (e.g., previous convictions), Mann–Whitney for interval or continuous variables that were non-Gaussian (e.g., offender group differences in the number of IIOC possessed), or one-way analysis of variance (ANOVA) for interval or continuous type data that were Gaussian (e.g., contact offense group differences in the number of IIOC possessed). For effect size, Cohen's d was calculated for continuous/ordinal variables by groups with the dual offender group used as the referent category.⁴ Odds ratios (OR)⁵ were used for dichotomous variables, r s for ranked variables by group, and Cramer's V for variables that have more than two categories.

Results

Sociodemographic Characteristics (Full Sample, $N = 120$)

Table 4 shows the sociodemographic characteristics for the full sample. There were no statistical differences in the age of offenders with both offender groups aged, on average, around 42 years, with no differences in their relationship status, $\chi^2(2, n = 112) = 0.05, p > .05$. Differences were found in the living arrangements between the two groups, $\chi^2(5, n = 118) = 11.90, ns$. When considering all living arrangements, both offender groups were most likely to live on their own. Examining living arrangements separately found significant differences for those living with a partner and their partner's children, with dual offenders more likely to do so than noncontact offenders, $\chi^2(1, n = 118) = 10.46, p < .01$, OR = 14.81, 95% CI = 1.86-118.06. All other living arrangement comparisons were nonsignificant.

Dual offenders were more likely to have any access to children, $\chi^2(1, N = 120) = 11.93, p < .01$. The odds of having access to children for the dual offender group was 5.21 higher (95% CI = 1.93-14.07) than the odds of access to children in the

Table 4. Comparative Sociodemographic Characteristics of Dual and Noncontact Offenders for the Full (N = 120) and Subsample (n = 60)

	Full Sample (N = 120)			Subsample Used for Image Comparisons (n = 60)		
	All Offenders (N = 120)	Dual Offenders (n = 60)	Noncontact (n = 60)	All Offenders (n = 60)	Dual Offenders (n = 30)	Noncontact (n = 30)
Age at arrest	M = 42.7, SD = 11.4	M = 42.9, SD = 11.9	M = 42.5, SD = 11.0	M = 42.8, SD = 11.2	M = 43.6, SD = 11.4	M = 42.0, SD = 11.1
Relationship status						
Never had, n (%)	6 (5.4)	3 (5.0)	3 (5.0)	4 (6.7)	3 (10.0)	1 (3.3)
Broken relationships, n (%)	53 (47.3)	28 (46.7)	25 (41.7)	20 (33.3)	9 (30.0)	11 (36.7)
Long-term partner, n (%)	53 (47.3)	27 (45.0)	26 (43.3)	31 (51.7)	16 (53.3)	15 (50.0)
Access to children						
Any access, n (%)	92 (76.7)	54 (90.0)	38 (63.3)	52 (86.7)	29 (96.7)	23 (76.7)
Has children, n (%)	50 (42.0)	29 (48.3)	21 (35.0)	29 (48.3)	16 (53.3)	13 (43.3)
Job access, n (%)	16 (13.3)	7 (11.7)	9 (15.0)	6 (10.0)	3 (10.0)	3 (10.0)
Family access	55 (45.8)	31 (51.7)	24 (40.0)	38 (63.3)	21 (70.0)	17 (56.7)
Other access	28 (23.5)	22 (36.7)	6 (10.0)	18 (30.0)	13 (43.3)	5 (16.7)
Living arrangements*						
On own, n (%)	35 (29.7)	14 (23.3)	21 (35.0)	13 (21.7)	4 (13.3)	9 (30.0)
Parents, n (%)	18 (15.3)	8 (13.3)	10 (16.7)	12 (20.0)	6 (20.0)	6 (20.0)
Individual not partner, n (%)	9 (7.6)	5 (8.3)	4 (6.7)	2 (3.3)	1 (3.3)	1 (3.3)
Partner, n (%)	15 (12.7)	7 (11.7)	8 (13.3)	9 (15.0)	5 (16.7)	4 (13.3)
Partner & own children, n (%)	28 (23.7)	13 (21.7)	15 (25.0)	16 (26.7)	7 (23.3)	9 (30.0)
Partner & her children, n (%)	13 (11.0)	12 (20.0)	1 (1.7)	6 (10.0)	6 (20.0)	0 (0.0)
Previous convictions						
Any previous, n (%)	48 (40.0)	35 (58.3)	13 (21.7)	22 (36.7)	16 (53.3)	6 (20.0)
Image offences	12 (10.2)	5 (8.3)	7 (11.7)	7 (11.7)	4 (13.3)	3 (10.7)
Other sexual offences, n (%)	7 (5.9)	5 (8.3)	2 (3.3)	4 (6.7)	3 (10.0)	1 (3.3)
Other nonsexual, n (%)	30 (25.4)	22 (36.7)	8 (13.3)	11 (18.3)	8 (26.7)	2 (7.1)

*p < .05. **p < .01. ***p < .001.

noncontact group, with this access most likely to be “other,” $\chi^2(1, N = 120) = 12.31, p < .001$, OR = 5.35, 95% CI = 1.98-14.47. Dual offenders were also more likely to have any previous convictions, $\chi^2(1, N = 120) = 16.81, p < .001$, OR = 5.06, 95% CI = 2.27-11.27, specifically those that were for nonsexual, $\chi^2(1, N = 120) = 8.14, p < .01$, OR = 3.62, 95% CI = 1.45-9.01.

Sociodemographic Characteristics (Subsample, $n = 60$)

Sociodemographic characteristics for the 60 IIOC are presented alongside the full sample ($N = 120$) in Table 4. As with the full sample, there were no significant differences in the age of offenders when arrested for IIOC possession (dual offenders, $M = 43.6, SD = 11.42$; noncontact offenders, $M = 42.0, SD = 11.11$). There were also no differences in the relationship status of the offenders, $\chi^2(2, n = 55) = 1.21, ns$, or living arrangements when arrested, $\chi^2(5, n = 58) = 8.28, ns$, when comparing the two groups. As with the full sample, living arrangements were compared separately. Dual offenders were most likely to live with a partner and their partner’s children than were noncontact offenders. Analysis revealed that 2 cells had an expected count less than 5, so an exact significance test was selected for Pearson’s chi-square, $\chi^2(1, n = 60) = 6.67$, exact $p = .024$. The odds of having access to children for the dual offender group was 8.8 times higher than the odds of having access to children in the noncontact offender group, $\chi^2(1, n = 60) = 5.19, p < .05$, OR = 8.8, 95% CI = 1.01-76.96. This was also present for other access to children, $\chi^2(1, n = 60) = 4.44, p < .05$, OR = 3.6, 95% CI = 1.06-12.06.

As with the full sample, there were significant differences between the offender groups when examining any previous convictions, $\chi^2(1, n = 60) = 7.18, p < .01$, OR = 4.6, 95% CI = 1.45-14.39. Dual offenders were significantly more likely to have a criminal conviction for nonsexual offenses (e.g., theft) than the noncontact offender group, $\chi^2(1, n = 60) = 3.87, p < .05$, OR = 4.7, 95% CI = 0.91-24.62. These results highlight the similarities between the full sample ($N = 120$) and the subsample ($n = 60$) in their sociodemographic characteristics.

Quantity of Indecent Images Possessed (Subsample, $n = 60$)

The number of IIOC possessed varied greatly for offender groups, and in most cases, were significantly positively skewed, thus requiring nonparametric comparisons to be utilized (Mann–Whitney U analysis). Despite using nonparametric comparisons, non-transformed data are presented throughout.

The difference between type of offender and number of IIOC possessed (subsample, $n = 60$). There was a significant difference between dual and noncontact offenders in relation to the total number of IIOC (both still images and movies combined) possessed, $U = 267.0, z = -2.71, p < .01, d = -0.50$, 95% CI = -1.01 - 0.02 , indicating that dual offenders had significantly less IIOC than noncontact offenders. A similar pattern emerged when examining still IIOC, $U = 263.0, z = -2.44, p < .05, d = -0.58$, 95% CI =

Table 5. Comparative Indecent Images of Children (IIOC) Possession by Noncontact and Dual Offenders

	Dual Offenders (n = 30) M/SD	Noncontact (n = 30) M/SD	Cohen's <i>d</i>
Total IIOC**	6,086.40/17,138.56	24,112.13/48,508.50	-.50
Total all Level 1***	982.13/2,446.53	10,730.67/28,016.70	-.49
Total all Level 2**	230.30/608.54	1,386.43/3,744.98	-.43
Total all Level 3*	287.67/660.81	613.27/1,079.99	-.36
Total all Level 4*	244.47/544.92	618.67/1,011.22	-.46
Total all Level 5*	25.43/62.26	82.90/170.02	-.46
Percent all Level 1	41.48/30.94	56.64/28.19	-.52
Percent all Level 2	16.53/18.58	15.05/10.67	.10
Percent all Level 3	13.30/9.32	8.84/7.90	.53
Percent all Level 4	22.74/22.79	20.19/17.23	.13
Percent all Level 5	5.15/8.15	5.99/18.18	-.06
Total still images*	3,386.68/8,500.32	23,193.83/47,880.00	-.58
Total movies*	53.75/108.96	912.57/1,990.70	-.61
Total still Level 1**	1,045.25/2,515.58	10,471.00/27,738.39	-.48
Total still Level 2*	230.93/568.46	1,316.70/3,618.67	-.42
Total still Level 3	305.00/677.85	575.27/951.69	-.33
Total still Level 4	250.07/547.58	543.30/832.89	-.42
Total still Level 5	26.85/63.36	75.37/156.51	-.41
Percent still Level 1	50.02/30.33	63.73/29.07	-.47
Percent still Level 2	15.47/17.61	9.61/8.05	.43
Percent still Level 3*	15.45/12.32	8.09/8.54	.70
Percent still Level 4*	14.81/13.06	7.79/8.27	.64
Percent still Level 5	4.20/10.98	0.77/0.81	.45
Total movies Level 1*	7.04/15.10	258.90/682.36	-.52
Total movies Level 2*	15.82/69.00	69.73/166.16	-.42
Total movies Level 3*	3.21/6.59	38.00/165.21	-.30
Total movies Level 4*	11.86/24.05	75.37/220.47	-.40
Total movies Level 5	1.36/2.59	7.53/25.31	-.35
Percent movie Level 1*	11.60/28.07	33.33/35.56	-.68
Percent movie Level 2	13.91/22.95	15.90/15.01	-.10
Percent movie Level 3	6.53/10.51	7.71/10.13	-.12
Percent movie Level 4	29.69/37.54	26.74/24.72	.09
Percent movie Level 5	6.14/12.43	6.31/18.34	-.01

p* < .05. *p* < .01. ****p* < .001.

-1.09-0.06, and IIOC in movie format, $U = 266.0$, $z = -2.41$, $p < .05$, $d = -0.61$, 95% CI = -1.13-0.09, with dual offenders possessing significantly less movie images than noncontact offenders, both representing a medium effect size (see Table 5).

The difference between type of offender and SAP level of IIOC possessed (subsample, $n = 60$). Nonparametric group comparisons revealed that dual offenders possessed significantly less quantities of IIOC at each of the SAP levels when compared to noncontact offenders (Level 1: $U = 194.0, z = -3.79, p < .001, d = -0.49, 95\% \text{ CI} = -1.00-0.03$; Level 2: $U = 228.0, z = -3.29, p < .01, d = -0.43, 95\% \text{ CI} = -0.94-0.08$; Level 3: $U = 293.0, z = -2.33, p < .05, d = -0.36, 95\% \text{ CI} = -0.87-0.15$; Level 4: $U = 285.0, z = -2.45, p < .05, d = -0.46, 95\% \text{ CI} = -0.97-0.05$; Level 5: $U = 288.5, z = -2.41, p < .05, d = -0.46, 95\% \text{ CI} = -0.97-0.05$).

As noncontact offenders were found to have significantly more IIOC in total than dual offenders, the amount offenders possessed at each level was calculated as a percentage to explore offenders' possession across the five SAP levels. There were no differences between offender groups regarding the proportion of IIOC at each of the SAP levels.

As there were differences found between the number of IIOC and not the proportion of IIOC at the SAP levels, still and movie were examined separately to explore whether the format of the IIOC differentiated the offender groups (see Table 5).

Nonparametric group comparisons revealed a significant difference between the two groups of offenders and the number of still images possessed across the SAP levels. Dual offenders were found to possess significantly smaller quantities of Level 1 still IIOC, $U = 214.5, z = -3.20, p < .01, d = -0.48, 95\% \text{ CI} = -0.99-0.04$, and Level 2 still IIOC, $U = 264.5, z = -2.43, p < .05, d = -0.42, 95\% \text{ CI} = -0.93-0.09$, than noncontact offenders.

As dual offenders were found to have significantly less IIOC in total than noncontact offenders, the IIOC possessed was calculated as a percentage to explore offenders' possession across the five levels. Nonparametric comparisons revealed a significant difference between offender groups when examining proportion of still IIOC at Level 3, $U = 288.0, z = -2.06, p < .05, d = 0.70, 95\% \text{ CI} = 0.18-1.22$, and Level 4, $U = 293.0, z = -1.99, p < .05, d = 0.64, 95\% \text{ CI} = 0.12-1.16$. Figure 1 illustrates that dual offenders possessed a higher proportion of both Level 3 and Level 4 still IIOC compared to noncontact offenders, with analyses revealing a medium to large effect size.

The number of IIOC in movie format was also examined. A significant effect was found for movie IIOC at Level 1, $U = 221.5, z = -3.21, p < .01, d = -0.52, 95\% \text{ CI} = -1.03, -0.01$; Level 2, $U = 237.5, z = -2.91, p < .01, d = -0.42, 95\% \text{ CI} = -0.93-0.09$; Level 3, $U = 275.5, z = -2.35, p < .05, d = -0.30, 95\% \text{ CI} = -0.81-0.21$; and Level 4, $U = 267.0, z = -2.45, p < .05, d = -0.40, 95\% \text{ CI} = -0.91-0.11$, with all indicating that dual offenders possessed a significantly lower number than noncontact offenders. Cohen's d revealed small to medium effect sizes.

As with still images, the total number of movies possessed was also measured as a percentage across the five levels (see Figure 2). Results revealed a significant, medium sized effect for Level 1 IIOC in movie format, $U = 200.0, z = -3.42, p < .01, d = -0.68, 95\% \text{ CI} = -1.20, -0.16$, indicating that dual offenders possessed a lower proportion than noncontact offenders.

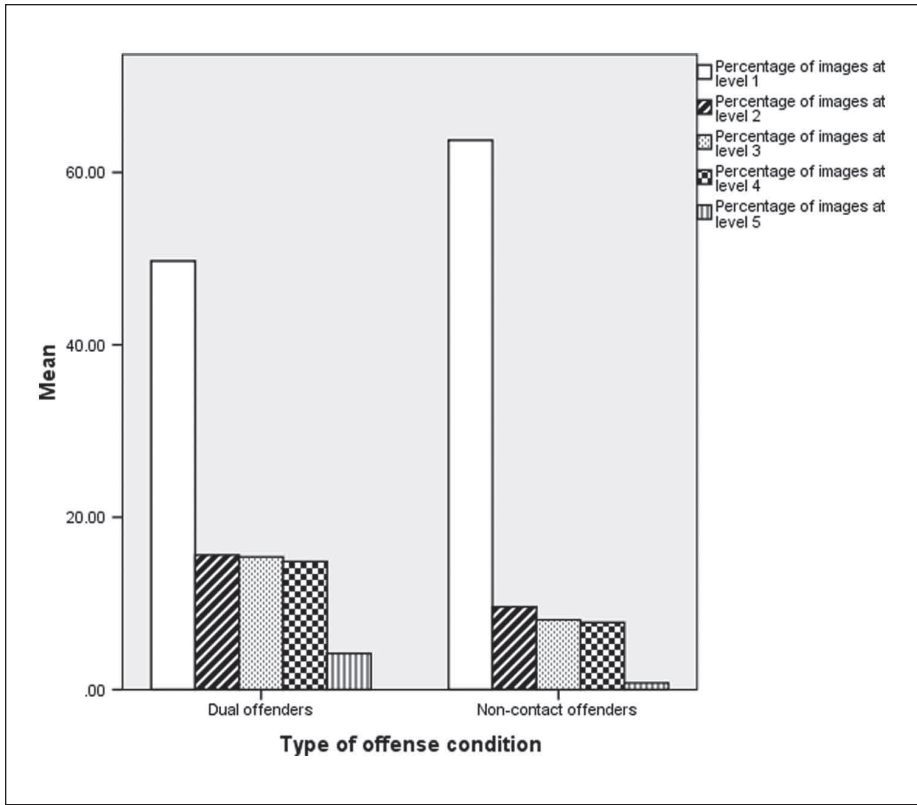


Figure 1. Bar Chart Indicating the Differences Between Dual and Noncontact Offenders and the Proportion of Still Images Possessed at Each SAP level

Types of Indecent Images Possessed by Offenders (n = 60)

The difference between type of offender and type of IIOC possessed. There were no differences between dual and noncontact offenders regarding either the gender, $\chi^2(2, n = 54) = 3.37, p > .05$, or average age, $t(47, n = 49) = 0.28, p > .05$, of children within the IIOC possessed. Both groups of offenders appeared to prefer IIOC of female children, with a mean age of 10 years. When the average age range of the children within the images was assessed, a significant difference was found between dual and noncontact offenders, $t(47, n = 49) = 2.96, p < .01$, with a large effect size, $d = -0.85$ (95% CI = $-1.38, -0.32$). Dual offenders possessed IIOC of children within a smaller age range ($M = 5.35, SD = 3.83$) in comparison to noncontact offenders ($M = 8.41, SD = 3.38$).

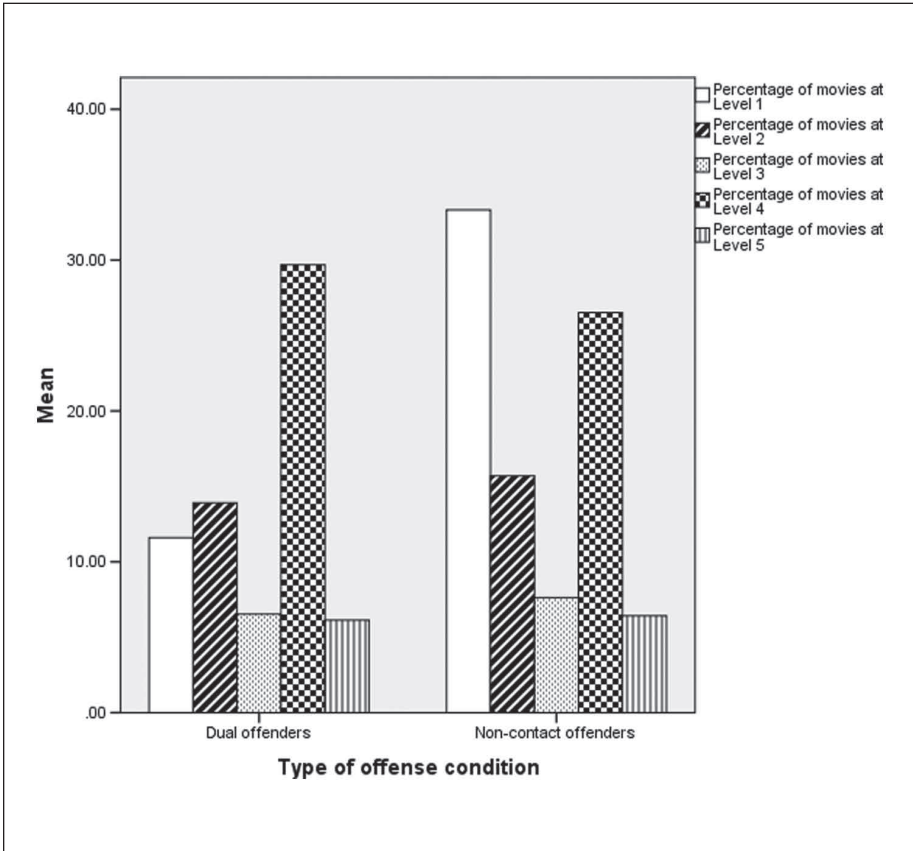


Figure 2. Bar Chart Indicating the Differences Between Dual and Noncontact Offenders and the Proportion of Movie Images Possessed at Each SAP Level

Internet Activity ($n = 60$)

Time spent downloading IIOC. A significant effect was found regarding the number of years offenders had been downloading IIOC, $t(40, n = 42) = 2.22, p < .05, d = -0.71$, 95% CI = -1.23 – 0.19 , with noncontact offenders found to be downloading IIOC for a longer period of time ($M = 5.56, SD = 3.31$) than dual offenders ($M = 3.25, SD = 3.21$). In addition, a significant positive correlation was found in terms of the total number of movies possessed and time downloading IIOC, $rs = 0.42, n = 42, p < .01$, suggesting that the longer offenders had been downloading IIOC, the more movies they were likely to possess. This relationship was not found when examining IIOC in still format.

There was a significant positive correlation between years downloading IIOC and amount of still IIOC possessed at Level 4, $r = .48, n = 42, p < .01$, and Level 5, $r = .50$,

$n = 42, p < .01$, suggesting that the longer offenders downloaded IIOC, the more IIOC they possessed at the higher levels. The same pattern was seen for IIOC in movie format, with significant positive correlations found between time spent downloading IIOC and amount of movie IIOC at Level 4, $r = .43, n = 42, p < .01$, and at Level 5, $r = .31, n = 42, p < .05$.

A significant positive correlation was found between years spent downloading IIOC and years of contact offending behavior, $r = .59, n = 13, p < .05$, among dual offenders, suggesting that IIOC may be used in parallel to contact offending.

Payment for IIOC. There was a significant difference in whether offenders had paid for IIOC, $\chi^2(1, n = 57) = 17.47, p < .001$. Noncontact offenders paid for IIOC access in 69% of cases, and only 14.3% of dual offenders paid. The odds of paying for access for IIOC for the noncontact offender group was 13.33 higher than the odds of paying for IIOC in the dual offender group (95% CI = 3.57-49.86).

Explanation during police interview. Offenders were assessed on the explanation given in police interview for their possession of IIOC. The four options were: (a) no comment on possession; (b) positive justification, for example, to catch and report offenders to police; (c) cognitive distortion, for example, downloading IIOC does not harm the child; (4) admit attraction to IIOC. There was a significant difference between offender groups, $\chi^2(3, n = 57) = 9.59, p < .05$, Cramer's $V = .41$, in the frequency of responses in these categories. Dual offenders were most likely to give no comment (39.3%), with more than a quarter (28.6%) giving a cognitively distorted view, and 17.9% admitting their attraction to IIOC. In contrast, nearly half of noncontact offenders (48.3%) admitted their attraction and around a quarter provided a positive justification (24.1%).

Producers and groomers. Offenders who produced their own IIOC (whether this was covertly, using a webcam, or recording of abuse) were significantly more likely to be dual offenders, $\chi^2(1, n = 60) = 7.18, p < .01$, OR = 4.57, 95% CI = 1.45-14.39. Most of the noncontact offenders in the sample did not produce IIOC (80.0%), whereas 53.3% of the dual offenders did.

Individuals who groomed children were significantly more likely to be dual offenders, $\chi^2(1, n = 60) = 17.47, p < .001$. On the basis of odds ratio, we found that the dual offender group were 26.0 times higher (95% CI = 6.53-103.50) than the odds in the noncontact offender group to be engaging in grooming behavior. The majority of dual offenders engaged in grooming behaviors (86.7%) compared to 20% of noncontact offenders. When examining the type of grooming behavior (four categories: 1 = no grooming behavior, 2 = offline grooming only, 3 = online grooming only, 4 = both offline and online grooming) there was also a significant difference, $\chi^2(3, n = 60) = 30.95, p < .001$, Cramer's $V = .72$. Not only were dual offenders significantly more likely to engage in grooming behaviors, these were more likely to be offline grooming techniques (73.3%) compared to noncontact (6.7%). In addition, 10.0% of both offender groups engaged in grooming behaviors using online techniques.

Table 6. Categorization of Offences by Dual Offenders Using Sentencing Advisory Panel (SAP) Levels

Offender Category	Level	SAP Level Description	<i>n</i>
Sexual touching	3	Nonpenetrative sexual activity between adults and children	10
Penetrative	4	Penetrative sexual activity involving a child or children, or both children and adults	14
Sadistic rapist	5	Sadism or penetration of, or by, an animal	6
		Total	30

Table 7. Frequency of Gender of Victims Within Indecent Images of Children (IIOC) and Contact Victims

	Contact Victim Male	Contact Victim Female	Contact Victim Male & Female	Total
IIOC male	5 (100)	0 (0)	0 (0)	5
IIOC female	0 (0)	11 (91.7)	1 (8.3)	12
IIOC male & female	1 (14.3)	4 (57.1)	2 (28.6)	7
Total	6	15	3	24

Note: Percentages are presented within parentheses.

The Relationship Between the IIOC Possessed by Dual Offenders and Their Contact Offense (n = 30)

Dual offenders were categorized according to the sexual action recorded within their offense using the relevant SAP levels (see Table 6).

Dual offenders were compared on total number of still and movie IIOC at each of the five SAP levels, with all producing nonsignificant effects. However, the proportion of still IIOC possessed was found to be significant for Level 1, $F(2, 25, n = 28) = 4.01, p < .05, r = .49$, with sadistic rapist dual offenders possessing a significantly lower proportion of Level 1 IIOC ($M = 22.37, SD = 22.25$) than sexual touching abusers ($M = 61.06, SD = 37.34$) and penetrative abusers ($M = 55.14, SD = 20.77$). In support of this pattern, those offenders categorized as sadistic rapists ($M = 30.05, SD = 12.69$) had a significantly higher proportion of Level 4 IIOC, $F(2, 25, n = 28) = 7.95, p < .01$, than sexual touching abusers ($M = 9.6, SD = 12.79$) and penetrative dual offenders ($M = 11.38, SD = 7.65$) with a large effect size, $d = 1.58$.

Due to the sample not meeting the chi-square assumptions, as 8 cells had an expected count less than 5, chi-square's were not computed. However, the percentages highlighted in Table 7 suggest potential associations between the gender of the children in the IIOC possessed by dual offenders and the gender of their contact victims. These suggest that when dual offenders owned IIOC of mainly males,

they contact offended against male children 100% of the time. Similarly, if the IIOC possessed by offenders were mainly of females, the contact victim was also female in 91.7% of cases. Among offenders who had fairly equal amounts of male and female IIOC, their contact victims were female in 57.1% of cases, male in 14.3%, and both genders 28.6% of the time. The overlap between the IIOC victim and contact child abuse victim matching in terms of gender was calculated at 75%, indicating that the majority of dual offenders possessed IIOC that matched the gender of their contact victim.

When taking the age of the children into account, analysis indicated a significant positive relationship between the average age of children in the IIOC and the average age of contact victims ($rs = .43, n = 19, p < .05$). This suggests that the higher the average age of the children in the IIOC, the higher the average age of the contact victim (and vice versa).

Discussion

This study sought to examine whether there are differences between dual and noncontact offenders in terms of their IIOC possession and whether the type of images possessed related to the contact offense committed. Significant findings were found for both these aims.

Discriminating Between Dual and Noncontact IIOC Offenders: Image Possession and Anchoring Behavior

The study found that the quantity of IIOC discriminated dual and noncontact offenders, with the latter having significantly more IIOC. McCarthy (2010) also found quantity to be a discriminator, but the pattern of results was in the opposite direction with contact offenders possessing significantly more IIOC than noncontact offenders. However, McCarthy did not distinguish images by seriousness. From the results of the current study what appears to be critical in discriminating dual and noncontact IIOC offenders is the qualitative variation across the five SAP levels and, specifically, where an individual's particular interest lies. Across the five SAP levels it appears that offenders have varying "anchor points." This may be one discriminating feature between those offenders with no current evidence of actual contact abuse with children and those who have. The anchor point appears to represent the prominent interest of an offender; in other words, it may suggest a discernible preference with oscillation to other levels. For example, an offender with a large number of images, but with a significant preference of Level 1 (even though they are in possession of higher levels), may be less likely to engage in child sexual abuse than an offender with fewer total images overall but who possesses a relative preference for higher-level images. Where the preference shifts from Levels 1 and 2 (erotic posing with no sexual activity, and nonpenetrative sexual activity between children) to Level 3 (nonpenetrative sexual activity between children and adults) and Level 4 (penetrative acts committed on

children), this may be psychologically significant. Anchoring in Levels 1 and 2 may reflect a preference for visualizing children without necessarily physically interacting with them. When it comes to Level 3 and Level 4, the preference may be for sexual activity between an adult and a child. Thus, although noncontact offenders had a greater number of IIOC (irrespective of SAP levels) compared to dual offenders, noncontact offenders tended to have a smaller proportion of the higher-SAP-level IIOC (relative to their lower SAP levels) compared to dual offenders.

The sexual fantasies of individuals and how these relate to offending behavior may explain the different “anchoring” preferences. Research in IIOC and adult pornography suggest that individuals seek material that is most specifically arousing to them (Howitt, 1995; Seto et al., 2001; Zillmann & Bryant, 1986), and this could explain the differences between the offender groups. In addition, dual offenders possessed IIOC that depicted children within a more restricted average age range compared to noncontact offenders. If an offender was seeking material of a particular age range (e.g., 5- to 7-year-olds), this may indicate a sexual preference for this age group. Therefore, as posited by Burgess et al. (1986), the sexual fantasies of the offenders may reflect the sexual offending behavior committed, or vice versa.

Discriminating Between Dual Offenders: Image Possession and Anchoring Behavior

The concept that offenders seek material that is specifically arousing to them can be equally applied to the within-group differences for dual offenders. Sadistic penetrative dual sexual offenders possessed a higher proportion of Level 4 IIOC and less Level 1 IIOC than penetrative and sexual touching offenders. This difference could be explained by sadistic offenders having preferences anchored at a higher level, reflecting the severity of their sexually assaultive behavior (Burgess et al., 1986). Furthermore, the gender and age of the IIOC victim was related to the contact victim, suggesting that IIOC anchoring preferences may relate to victim selection. This is consistent with Quayle and Taylor’s (2002) conclusion that IIOC “preserve a child at the very age and stage of development that is most arousing to the offender” (p. 866). This homology between images possessed and acts committed by dual offenders are potentially indicative of the way in which the more serious offenders use the internet as a behavioral extension to their offending behavior.

Additional Likelihood Factors for Contact Child Sexual Offending

Although there were anchoring preferences evident within offenders’ IIOC possession, other factors existed that also contributed to the likelihood of dual offending. Dual offenders were more likely to have access to children, highlighting the importance of access as a situational enabler to offending. This was most likely to involve “other” access such as befriending children within the neighborhood. Buschman et al. (2010) similarly concluded that access to stranger contact victims within the neighborhood (e.g., children in surrounding areas of their homes) was the most frequent

type of access to victims for contact offenders within their IIOC sample. Not only dual offenders were more likely to have access to children, they were also more likely to groom offline. This supports McCarthy's (2010) finding that dual offenders were more likely to engage in grooming behaviors. As McCarthy's finding related to "online" grooming, this raises the issue of transference from the online environment to the real world. Grooming behavior was also a method by which offenders produced their own imagery. This study found that dual offenders produced IIOC by recording the actual sexual assault of the victim (offline), whereas noncontact offenders recorded the sexual behavior over webcam or covertly. Regardless of the method of production (webcam or contact abuse), dual offenders were more likely to produce IIOC, consistent with Wolak et al.'s (2005) findings. Taking these three factors into consideration, this could suggest that dual offenders are more opportunistic and predatory (Wortley & Smallbone, 2006), or as Neutze, Seto, Schaefer, Mundt, and Beier (2011) state, more aware of risky situations.

Dual offenders were less likely to engage in risky behavior online, such as paying for access to IIOC, and more likely to give a "no comment" interview. This may suggest that dual offenders are more criminogenic. This is supported by the finding that dual offenders were significantly more likely to have a criminal conviction, specifically for a nonsexual offense (e.g., theft). This supports the concept of criminal antecedents having predictive abilities when examining offense behaviors (Davies et al., 1998; Soothill et al., 2008; Wilson & Alison, 2005).

Time Spent Accessing IIOC

For both dual and noncontact offenders, the longer (in years) they downloaded IIOC, the higher amount of IIOC possessed at Levels 4 and 5 for both movie and still IIOC. However, the chronological points at which these Level 4 and Level 5 IIOC were possessed were not recorded. This could suggest that prolonged engagement leads to satiation and habituation, increasing the need for more severe material to reach arousal (Sullivan, 2002; Sullivan & Sheehan, 2002). This is consistent with research on adult pornography (Zillmann & Bryant, 1986). This could also suggest a "trajectory of internet use, moving from less to more frequent use, and less to more deviant material accessed over time" (Glasgow, 2010, p. 91). An alternative explanation maybe that increased engagement with the internet, IIOC, and online communities allows an offender to become more experienced in their search criteria and as such are able to locate higher-level images. However, the finding that noncontact offenders were less likely to possess the higher SAP levels than dual offenders would need further exploration in relation to chronology and pathways of offending.

Limitations

A number of limitations of the current study must be noted. First, this study used a stratified random sample of IIOC offenders, identified and grouped on the basis of their index offenses. This suggests that there are likely to be undetected contact

offenders within the noncontact group, consistent with the findings of Bourke and Hernandez (2009). Thus, any findings in this study should be treated with caution. Although the sample was relatively small, it is also the largest U.K. sample to date that has explored IIOC on these detailed factors. All information was taken from case files and discussions with investigators that were originally gathered for prosecution and investigatory purposes, rather than for use in this study. Every effort was made to verify data using a variety of means.

It is important to note that this research did not gather temporal information on offender's behavior. Consequently, any findings regarding the time downloading IIOC was based on the offender's admission in interview at the time of arrest and any available computer analysis information. Timeline in contact offending behavior was gathered through victim and offender statements as well as any medical documentation provided. As offenders were detected and arrested through different means (dual offenders through reporting by the contact victim and noncontact offenders through another investigation or payment for images), it is acknowledged that the data analyzed may be a snapshot of their offending behavior. As a result they could be at different stages in their offending pathway. With both groups reporting similar ages for IIOC arrest, this may suggest that noncontact offenders are slower to progress, or started offending later in life. This requires further investigation.

By treating the offenders as two distinct groups, it also minimizes the effect of offenders engaged in grooming, inciting, or production of IIOC, as within the current study these offenders could be categorized as either dual or noncontact. Therefore, it is acknowledged that the noncontact offender group is not a homogenous group, as 6 participants displayed grooming behavior, but did not commit a "hands-on" offense against a child. To further strengthen the results of this exploratory article, further work is currently being undertaken with a larger sample that explores other offender groupings. Furthermore, the categorization according to the SAP levels (SGC, 2007) means caution should be used when interpreting results as some countries do not categorize images or use other scales such as COPINE (Taylor et al., 2001).

Finally, offenders were categorized as dual offenders if they had any known contact offense; therefore, the contact offense could have come before, during, or after the IIOC conviction. This reflects the reality of how the information would be received by law enforcement agencies. When IIOC cases are initially detected the police do not always immediately know the identity of the offenders and would therefore be unaware of any previous convictions or the order in which their offenses occurred.

Implications

One of the challenges for law enforcement agencies is the prioritization of investigations of IIOC, with increasing workloads and more severe IIOC available (Internet Watch Foundation, 2008; Wolak et al., 2009). This study was designed pragmatically to investigate factors that may be available to law enforcement to inform decision-making processes and prioritization. It is acknowledged that studies such as this may have

implications for law enforcement agencies (Eke et al., 2011). Any interpretations of the findings of this article should be tentative due to the sample size. However, it has identified several likelihood factors for contact child sexual abuse that may be used to assist in prioritization. This study provides an exploratory starting point in terms of detailed examination of IIOC and how possession relates to the offending behavior. The larger sample identified factors such as living with a partner and their partner's children, previous convictions, and access to children, which could be used to assist with prioritization. More tentatively from this exploratory study, factors such as smaller IIOC possession, higher proportion of Level 3 and 4 still IIOC, lower proportion of Level 1 IIOC movies, smaller age range of IIOC victims, production of IIOC, and evidence of grooming behaviors could also be used for law enforcement prioritization.

Conclusion

This article tested hypotheses proposing that dual offenders and noncontact offenders could be differentiated according to their IIOC possession and offending behavior. The study found differences in previous convictions, access to children, and number, proportion, and type of IIOC viewed. The key finding of this exploratory study was the anchoring preferences displayed that differentiated dual offenders from noncontact offenders as well as sadistic rapists from sexual penetrative and sexual touching offenders. Noncontact offenders anchored on lower-SAP-level IIOC, with no preference in terms of the age, gender, or sexual action. In contrast, dual offenders preferred higher SAP levels and also possessed IIOC within a smaller age range, which tended to match their sexual contact victim in terms of age and gender. Moreover, the more severe the contact child sexual offense committed, the higher the proportion of penetrative IIOC possessed. The increased likelihood of previous convictions suggested dual offenders were more criminogenic, and their increased access to children may support theories of opportunistic and predatory offending. Taken together, this supports the notion that offenders are likely to take deliberate actions to possess IIOC (Taylor et al., 2001) and that these individuals will seek IIOC that reflects their sexual fantasy (Howitt, 1995, Seto et al., 2001). Thus, the anchoring of IIOC may represent the sexually assaultive behavior of dual offenders (Burgess et al., 1986).

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Declaration of Conflicting Interests

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Notes

1. A meta-analysis conducted by Seto, Hanson, and Babchishin (2011) found Bourke and Hernandez (2009) study to be a statistical outlier when examining self-report data.
2. Data were nonnormal: Skewness value = 3.37 indicating data were positively skewed. Kurtosis = 11.99 indicating a leptokurtic distribution with a high probability of extreme scores.
3. As this is an exploratory article, the effect of grooming behavior was examined as a possible discriminatory factor. Further work is currently being undertaken by the authors with a larger sample to discriminate the groomer/inciter group as a separate group of offenders from dual and noncontact offenders.
4. Cohen (1988) defined a small effect size as $d = 0.20$, a medium effect size as $d = 0.50$, and a large effect size as $d = 0.80$.
5. 95% confidence intervals are also provided for all odds ratios with many indicating a broad range of values suggesting low precision.

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