



From child pornography offending to child sexual abuse: A review of child pornography offender characteristics and risks for cross-over



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ABSTRACT

In this review, concrete directions are provided for individual risk assessment, treatment planning, and future research on child pornography offending. First, based on reviewing offender characteristics, including demographics, socio-affective difficulties, cognitive distortions and psychosexual issues, it is concluded that despite individual differences, many child pornography offenders have psychological difficulties in multiple areas of functioning. Based on earlier child pornography offender typologies, it is proposed that risk factors of individual offenders can be viewed along the lines of two continua: (1) features related to criminal behavior, and (2) sexual deviance/fantasy. These continua not only give insight into psychological differences between offender types, but also allow for variation in the severity of psychological difficulties within offender types and therefore may enhance individual risk assessment and treatment planning. Moreover, risk factors for cross-over are discussed, including individual characteristics, factors related to engagement with the internet, and the offline environment. Future research should focus on the integration of risk domains within particular offending types. Specifically, research is needed on non-offending pedophiles in order to gain more insight into the relationship between pedophilia and child pornography offending in general.

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1. Introduction

Child pornography, which includes visual depictions of sexual conduct involving a minor, has been a problem for many decades. However,

the advent of the internet has made it a bigger and more widespread societal problem (Webb, Craissati, & Keen, 2007). Despite its high relevance, it still remains unclear what factors are associated with engaging in child pornography offending or predispose one to cross-over to committing child sexual abuse. For example, for some offenders, child pornography may help control their deviant sexual interests in children and prevent them from committing sexual hands-on offenses. However, for others viewing this material stimulates existing fantasies and lowers inhibitions to act on them which may result in cross-over behavior (Quayle & Taylor, 2002). Furthermore, research on the characteristics of child pornography offenders is scarce, inconsistent, and still in development. Only recently, researchers have begun to develop typologies that characterize different child pornography offending motivations and behaviors (e.g., Krone, 2004; Lanning, 2010; Seto, Cantor, & Blanchard, 2006; Seto, Wood, Babchishin, & Flynn, 2012). Moreover, despite efforts to explain child pornography offending within more general frameworks of sex offending (Elliott & Beech, 2009; Middleton, Elliott, Mandeville-Norden, & Beech, 2006), there is only one model to date that provides an explanation for cross-over behavior directly related to internet offending: the model of potential problematic internet use (Quayle & Taylor, 2003). This model, based on the etiology of Pathological Internet Use (Davis, 2001), states that cognitive distortions not only promote problematic behavior, such as downloading of child pornography, but also partly cause the progression of this behavior into sexual contact offending. According to this model, other factors that contribute to the process of engagement in the internet and problematic internet behavior include individual risk factors such as early sexual experience and sexual preference for children (i.e., 'setting events'), internet characteristics, such as anonymity, and 'cognitive-social factors' such as less contact with people in the offline world. However, despite a growing interest in child pornography offending, an overview of the state of knowledge and a clear focus for future research are lacking.

This study aims to address these limitations, by providing a selective overview of the contemporary literature on child pornography offending. Specifically, current gaps in the literature are identified and promising directions for future research are suggested. We will discuss four domains of child pornography offender characteristics, including demographics, psychological problems related to socio-affective issues, distorted cognitions, and psychosexual difficulties. Furthermore, we highlight the heterogeneity among child pornography offenders and the importance of focusing on offender specific risk factors in order to enhance risk assessment and treatment planning. It is proposed that offender specific risk factors may be mapped onto two continua: (1) features related to criminal behavior, and (2) sexual deviance/fantasy. Moreover, we discuss risk factors for cross-over, including individual characteristics, factors provided through engagement in the internet, and through contact with the offline environment. Finally, we provide concrete directions for future research. In order to better understand child pornography offending, we will first touch upon the issues related to legally defining child pornography and the diverse working definitions in practice and research.

2. Legal definition and research problems

It is complicated to provide a global legal definition of child pornography because views about 'children' and 'child pornography' are bound to moral, cultural, social, and religious beliefs. Hence, definitions differ across countries and even among legal jurisdictions within the same country (Healy, 1996). This has consequences for law enforcement because different legal definitions make it difficult to combat child pornography offending internationally (Burke, Sowerbutts, Blundell, & Sherry, 2002). United States federal law, for example, defines child pornography as any visual depiction, including any photograph, film, video, picture, or computer-generated image or picture, that is made or produced by electronic, mechanical, or other means, of sexually explicit conduct that involves or seemingly involves a minor (18 U.S.C. §, 2256(8), 2006). However, whether or not clear definitions of child

pornography are at hand, it can be difficult for law enforcement to make decisions on the basis of computer data and images to determine which individuals should be prosecuted. For example, it may be hard to estimate the age of the victims depicted on the images in order to determine if a minor is involved (Wells, Finkelhor, Wolak, & Mitchell, 2007).

What makes research on child pornography even more complex is that definitions of child pornography may differ between legal and academic contexts (Beech, Elliott, Birgden, & Findlater, 2008). For example, although images depicting clothed children may be considered legal by law, they may serve as child pornography for some individuals because the erotic nature of the images can not only be viewed in light of the objective qualities of the material itself, but is also determined through the person that is watching. Hence, such images may be used to relieve sexual arousal by someone with pedophilic interests (Taylor, Holland, & Quayle, 2001). Furthermore, views about what constitutes child pornography and child pornography offending may differ across studies because the inclusion criteria for child pornography offending vary greatly. That is, some studies include those who have sexually abused a child in the past (e.g., Bates & Metcalf, 2007; Laulik, Allam, & Sheridan, 2007; Niveau, 2010; Seto et al., 2006), whereas other studies focus on community samples that include individuals who have admitted that they have engaged in child pornography, but who did not come into contact with the legal justice system (Seigfried, Lovely, & Rogers, 2008).

Moreover, insight into the type of material is often not specified; yet, this may give insight into offender specific risk factors because the type of material that offenders use varies greatly. For example, pictures range from depicting relatively innocent nudity through to pictures of children being sexually abused (Taylor et al., 2001). Furthermore, pseudo imagery exists in which non-sexual photographs are digitally adjusted into child pornographic images (a phenomenon that is called *morphing*) next to virtual images of digitally created children, films, stories, and even live child pornography via webcams (Krone, 2004; van Wijk, Nieuwenhuis, & Smeltink, 2009).

As a consequence, different definitions of child pornography and different research samples have led to problems with the generalization of the findings and the comparability of results across studies. This should be kept in mind while reading this article. In this study, the term child pornography offender refers to those who accessed and/or distributed and/or produced child pornographic material without having committed a (known) child sexual hands-on offense. When the studies described also included child pornography offenders that have committed a contact offense, this will be clearly specified.

3. Offender characteristics

3.1. Demographics

There is some consensus about the demographic characteristics of child pornography offenders. For example, studies report offenders to be primarily white, aged between 25 and 50 years, and compared to child sexual abusers, more likely to be employed (Burke et al., 2002). With regard to intellectual functioning a considerable amount of child pornography offenders has above average intelligence; in several studies about 30% had completed higher education (McCarthy, 2010; Seto et al., 2006; Surjadi, Bullens, van Horn, & Bogaerts, 2010). With regard to employment, law enforcement and mental health professionals argue that child pornography offenders often have jobs in sectors with little or no social interaction or where contact with children is a daily activity (van Wijk et al., 2009).

However, a typical profile of child pornography offenders is missing. Research on marital status shows mixed results with studies showing that more than 50% of child pornography offenders were single, either at the time of the offense or at the moment of the conducted study (e.g., Henry, Mandeville-Norden, Hayes, & Egan, 2010; Neutze, Seto, Schaefer, Mundt, & Beier, 2011; Reijnen, Bulten, & Nijman, 2009). Some professionals argue that these offenders are often characterized

by marital problems and inequality between romantic partners (van Wijk et al., 2009). In short, although the literature identified several demographic risk factors of child pornography offending, studies often do not include control groups of the general population. Hence, it is unclear as to what extent these child pornography offenders differ from the normal population with regard to demographic characteristics.

As research on criminal history indicates, child pornography offending occurs in all social groups with much heterogeneity in offenders (Wortley & Smallbone, 2006). Although it is often assumed that child pornography offenders have no history of offenses (Burke et al., 2002; Sullivan, 2009) and a low risk to commit future offenses (Seto, Hanson, & Babchishin, 2011), empirically little is known of child pornography offenders' criminal history. Research shows that before the emergence of the internet, between one-fifth and one-third of the offenders arrested for possession of child pornography were also involved in sexual contact abuse. Because the internet has made accessing child pornography much easier (Wortley & Smallbone, 2006), the number of noncontact child pornography offenders may well have increased since. In self-referred pedophilic and hebephilic males (i.e., males who have admitted to have a paraphilic sexual interest in either prepubescent or pubescent children), 50% claimed to have committed child pornography offenses in the past, only 14.3% acknowledged to have sexually abused a child in the past, and 35.7% reported a history of both child pornography offending and child sexual abuse (Neutze et al., 2011). Yet, whether these numbers reflect the true criminal history of these offenders remains unclear because most data depend on police records or self-reports which may have limited reliability and often does not provide information about undetected offenders (i.e., the *dark number*) (Bogaerts, Buschman, Kunst, & Winkel, 2010; Seto et al., 2011).

An understudied area of child pornography offenders are early life risk factors and experienced difficulties in the past. However, a few notable exceptions showed that child pornography offenders had a history of child sexual abuse, with estimates ranging from 11 to 26% (McCarthy, 2010; Webb et al., 2007). In general, both child pornography offenders and child sexual abusers are more often victims of sexual abuse in childhood than people in the normal population (Babchishin, Hanson, & Hermann, 2011). However, child pornography offenders suffer less from sexual victimization than child sexual abusers (Sheldon & Howitt, 2007; Webb et al., 2007).

Finally, there is an increasing focus on child and adolescent sexual behavior in order to understand the etiology of child pornography offending. Early sexual activity seems to be common in both internet and contact sex offenders (Sheldon & Howitt, 2007), and may be a risk factor for pedophilia in general. In a study on pedophiles, many of those without a criminal history claimed to be sexually active as a child, often from a very young age. Sixteen of the 36 individuals reported that they had engaged in peer sexual play before the age of 10. These activities did not only include childish games of exploratory sexuality such as 'playing doctor' or discovering masturbation, but some claimed to be engaged in oral sex and/or penetration (Goode, 2010). Yet, these results should be treated with caution as there is little knowledge of normal levels of childhood sexual play in the general population (Elliott & Beech, 2009).

3.2. Socio-affective difficulties

Studies on socio-affective difficulties in child pornography offenders mostly center on psychological differences between child pornography offenders and child sexual abusers. There is consensus that although some child pornography offenders do not demonstrate high levels of psychopathology (Henry et al., 2010; Laulik et al., 2007; both included some contact offenders), many have socio-affective deficits. More specifically, mood disorders, such as depression, and anxiety-related problems (McCarthy, 2010), such as obsessive compulsive disorder (Bourke & Hernandez, 2009), are commonly reported. Child pornography

offenders may also suffer from low self-esteem, emotional loneliness, and personal distress (Henry et al., 2010). Although child pornography offenders are more often characterized by personality traits typically related to cluster C personality disorders than to cluster A and B personality disorders (Niveau, 2010; included two contact offenders), some offenders also show traits related to cluster A disorders, such as feeling misunderstood by others and being isolated and somewhat withdrawn (Laulik et al., 2007). Interpersonal difficulties include under-assertiveness (Henry et al., 2010), low dominance and warmth, and little empathy in social relationships. Finally, there is support for antisocial related tendencies in a subgroup of child pornography offenders. These include personality traits related to exploitation and manipulation, low moral choice internal values (Seigfried et al., 2008), addictive tendencies (Niveau, 2010), impulsivity (Middleton et al., 2006), and psychopathic deviation (Reijnen et al., 2009).

However, there is debate about the severity of psychological problems of child pornography offenders in comparison to those of child sexual abusers. On the one hand, several studies have suggested that child pornography offenders have fewer socio-emotional problems than child sexual abusers because child pornography offenders seem to have higher self-esteem, less personal distress, a lower external locus of control, and less features related to criminal and antisocial behavior (Bates & Metcalf, 2007; Elliott, Beech, Mandeville-Norden, & Hayes, 2009; Magaletta, Faust, Bickart, & McLearn, 2012). On the other hand, child pornography offenders seem to have more problematic scores on impression management, under-assertiveness and emotional-loneliness compared to child sexual abusers (Bates & Metcalf, 2007; Elliott et al., 2009), suggesting more troublesome interpersonal functioning. Yet, other studies found no differences on emotional deficits (including intimacy and loneliness problems) and sociality between child pornography offenders and child sexual abusers. Also, these groups did not differ with regard to socio-emotional problems such as impulsivity, thrill-seeking, extraversion, and frustration-tolerance (Neutze et al., 2011; Reijnen et al., 2009).

3.3. Cognitive distortions

Cognitive distortions are highly relevant in understanding sex offending. With regard to child pornography offending, it is argued that some of the cognitive distortions that offenders possess are more related to sex offending in general, than specifically to engaging in child pornography (Howitt & Sheldon, 2007; Neutze et al., 2011). One study compared cognitive distortions displayed by child sexual abusers without a history of child pornography offenses, child pornography offenders without sexual contact offenses, and mixed contact-child pornography offenders (Howitt & Sheldon, 2007). Results indicated few differences in cognitive distortions between these groups. Many offenders agreed with cognitions about the perceived uncontrollability of the offense behavior, cognitions that portrayed the sexual abuse of children as reasonable under certain circumstances, and cognitions that stated that the world is a hostile place. Yet, there was a significant difference between the child pornography offending group and the child sexual abuser group in the evaluation of cognitions concerning children as sexual subjects. These cognitions included statements as: "Sometimes children don't say no to sexual activity with an adult because they are curious about sex or enjoy it". Results showed that child pornography offenders supported more of these items than child sexual abusers did (Howitt & Sheldon, 2007).

In contrast, Bates and Metcalf (2007) found that child sexual abusers agreed more with these types of cognitions. An explanation for these conflicting results may be the use of different instruments to measure cognitive distortions in these two studies. Particularly, Howitt and Sheldon (2007) developed measures specifically for internet sex-offenders which may have been more sensitive in studying child pornography offenders (Henry et al., 2010). In line with their findings, child sexual abusers may have learned through their experience with contact abuse

that these statements about the sexuality of children are not true (Elliott & Beech, 2009). Child pornography offenders instead may justify their behavior by the fact that these images depict laughing children who look like they are willing and eager to engage in sexual activities (Quayle & Taylor, 2002).

Indeed, Quayle and Taylor (2002) showed that child pornography offenders have cognitive distortions that are directly related to the content of the images. They argued that these offenders often use some sort of 'moral' code to decide which images are 'acceptable' to use for their sexual gratification. These are based on victim characteristics, such as age and sex of the victim, but also on the sexual activity depicted. Furthermore, they may engage in justification of their offense behavior by comparing the seriousness of downloading child pornography with the actual act of abusing a child and argue that the latter is not something that they would ever engage in. Also, many child pornography offenders minimized their behavior by engaging in depersonalization of the pictures, e.g., seeing them as objects that could be collected and traded, 'like base-ball cards' (Quayle & Taylor, 2002). However, it should be noted that 4 out of the 13 child pornography offenders in this sample had also committed child sexual abuse. Therefore, these distortions are not only exclusive for noncontact child pornography offenders. Finally, compared to child sexual abusers, child pornography offenders agreed less with statements measuring emotional congruence with children, had higher victim empathy (Bates & Metcalf, 2007; Elliott et al., 2009), and had healthier attitudes toward general sexual assault (Webb et al., 2007).

Although research has provided insight into the type of cognitive distortions that child pornography offenders may display, it should be kept in mind that these distortions are not stable characteristics but susceptible to change. For example, Quayle and Taylor (2003) showed that cognitive distortions can change due to contact with other offenders that may justify and reinforce sexually deviant behavior. More specifically, child pornography offenders may display two types of cognitions: *offense-level* cognitions that are related to the appropriateness and consequences of viewing child pornography images, and *sexual abuse-level* cognitions that are related to the appropriateness and consequences of having sex with children. Although child pornography offenders are more likely to make use of the first set of cognitions, they may develop sexual abuse-level distorted thinking by repeated engagement in child pornography (Elliott & Beech, 2009).

Finally, because of the ongoing debate on cognitive distortions, different views about the onsets and functions of these distortions should be considered (Howitt & Sheldon, 2007). First, cognitive distortions are a set of beliefs that offenders generate and use in order to overcome inhibitions against offending and are part of the preparation process. Second, cognitive distortions are rationalizations that are used by offenders to justify their behavior after committing an offense. Third, cognitive distortions develop prior to the offense and reflect the offenders' distorted experiences and hence contribute to the initiation of behavior. Likely, in explaining cognitive processes all these views may be important, assuming that the term 'cognitive distortions' reflects different mechanisms and functions. Offenders may thus not only differ in the content and the development of their distortions but also in the onset of these cognitions and the functions that these distortions have at a given time. For example, it may be argued that child sexual abusers more often develop cognitive distortions early in life due to traumatizing experiences such as being sexually abused. In contrast, child pornography offenders who access child pornography accidentally while searching for regular pornography may develop these distortions post-offending to justify and minimize the fact of watching children being abused. Later on, offenders may use other excuses to overcome inhibitions to engage in this behavior again, or worse: cross over to contact offenses. Hence, getting more insight into the function and development of these cognitions in offenders may give more insight into the initiation of child pornography offending and risks for cross-over.

3.4. Psychosexual difficulties

Regarding the use of pornographic material, people at first glance look for material that corresponds to their sexual preference (Seto, 2010). The specificity of pornographic material seems to be a stronger diagnostic indicator of sexual preference than actual sexual contact. For example, child pornography offenders have a stronger pedophilic pattern of sexual arousal than child sexual abusers (Seto et al., 2006; including some child pornography offenders with a history of sexual offending). This is also supported by a meta-analysis indicating that compared to child sexual abusers, child pornography offenders possessed more sexual deviance (Babchishin et al., 2011). However, not all child pornography offenders are pedophiles. In order to discriminate between child pornography offenders with and without pedophilia it is important to include characteristics of the child pornographic material such as age of the victims depicted on the images. That is, it is expected that child pornography offenders without a paraphilic preference for minors are attracted to images of teenage boys and/or girls in a way that non-pedophilic men may commit sexual offenses against girls who did not yet reach adulthood, but not show a preference for images that depict very young children (Seto et al., 2006).

To better understand the relationship between child pornography offending and pedophilia, it is important to examine how many pedophiles engage in child pornography offending. One study with self-identified pedophiles showed that a small minority had no history of abusing a child or watching child pornography (Neutze et al., 2011). However, more insight into pedophilic child pornography offenders and non-offending pedophiles is needed in order to determine risk- and protective factors specifically for pedophilic individuals. Research on pedophiles outside a clinical or juridical setting is scarce but one study indicated that pedophiles who do not want to offend may actually be troubled by their desire to have sexual contact with children and are often scared of the inability to control their arousal (Hossack, Playle, Spencer, & Carey, 2004). In order to refrain from offending, they may seek help if they are able to overcome their fear of the possible consequences of disclosure.

It should thus be kept in mind that there are no direct relationships between pedophilia and child pornography offending and that stigmatization and self-regulatory issues are important risk factors for pedophilic offending. Moreover, inhibitory control to refrain from offending may be more important for child pornography downloaders than for child sexual abusers because it is relatively easy to access child pornography online and, therefore, it may be harder to resist. Some researchers have touched upon this issue in comparing child pornography offenders with child sexual abusers on self-regulation. Although Neutze et al. (2011) found no differences between these groups, Webb et al. (2007) found that child pornography offenders had more sexual self-regulation problems than child sexual abusers. They argued that a part of sexual self-regulation is sexual preoccupation, which is reflected in routine pornography use. Regarding sexual preoccupation, more than half of child pornography offenders had an indication for compulsive sexual behavior (Niveau, 2010). Therefore, compulsive or addictive sexual problems seem to be part of the psychosexual make-up of child pornography offenders.

4. Child pornography offender typology

In this section, to highlight the heterogeneity in child pornography offenders and their different motivations, different typologies that have been identified in literature will be described and integrated. Starting with the classification of Elliott and Beech (2009), based on work done by other researchers (e.g., Krone, 2004), it is argued that earlier typologies can roughly be divided into four groups of child pornography offenders. Two of these groups, the direct victimization and commercial exploitations offenders, include child sexual abusers and will, therefore, not be discussed here. The other two groups

comprise: (1) periodically prurient offenders who access child pornographic material impulsively or out of curiosity as part of a larger interest in pornography; and (2) fantasy-only offenders who access and/or trade material in order to find gratification for their sexual interest in children but do not have a known history of child sexual abuse. In addition to Elliott and Beech (2009), who described the major problem areas of these groups, we argue that risk factors of these offender types can broadly be described along the lines of two continua: (1) their features related to criminal behavior (e.g., self-control issues, impulsivity, and cognitive distortions), and (2) their sexual deviance/fantasy. This can give insight into the different underlying motivations of these two offender types and offers an explanation of the variation in severity of psychological problems between child pornography offenders of the same offender type. As such, mapping individuals on these continua may result in better risk assessment and more insight into specific treatment needs for child pornography offenders. In the following, we will support the validity of these continua with empirical work on child pornography offender clustering (Henry et al., 2010; Middleton et al., 2006; Surjadi et al., 2010). However, more in-depth research is needed to get more insight into the developmental pathways of different offending types.

4.1. Periodically prurient offenders

In periodically prurient offenders, socio-affective deficits (e.g., low self-regulation and inhibitory control) may be the primary cause of accessing material beyond the scope of legal pornography. However, as noted at the beginning of Section 4, offenders within a particular offender type may differ significantly in the severity of their psychological problems. Henry et al. (2010) found support for three groups of child pornography offenders, i.e., a 'normal', an 'emotionally inadequate' and a 'deviant' offender group. The 'normal' group did not differ from the normal population with regard to pro-offending and/or socio-affective features. Also, the total impulsivity scores measured with the Barratt Impulsiveness Scale (BIS-11) (Patton, Stanford, & Barratt, 1995) were lower than in the 'emotionally inadequate' and 'deviant' offender groups. However, scores on the subscale of non-planning impulsivity, which assesses self-control, were similarly high across offender groups. Further, 'normal' offenders had a more problematic score on self-control than on cognitive and motor impulsivity. Therefore, it seems that these offenders have some difficulties with appropriately controlling behavior and thus fall within the periodically prurient offender type, although they do not have many impulsivity problems.

Research also indicates that some periodically prurient offenders have severe interpersonal problems. This is reflected in their more severe impulsivity issues, interpersonal difficulties and personal distress compared to both the normal population and other sexual offenders (Henry et al., 2010; Middleton et al., 2006). Middleton et al. (2006) argued that these offenders fell within the 'Emotional dysregulation' pathway of the Pathways Model of Sexual Offending (Ward & Siegert, 2002): a model consisting of pathways describing engagement in child sexual abuse. The 'Emotional dysregulation' pathway describes offenders who mainly have problems related to successfully regulating their negative emotions and use sex as a coping strategy (Ward & Siegert, 2002), which is partly the result of antisocial personality structures that are often present in these offenders (Bogaerts et al., 2010). They may claim that they are primarily drawn to child pornography out of non-sexual motivations such as to avoid real life confrontations or to gain enjoyment from collecting child pornographic material (Surjadi et al., 2010). With regard to cognitive distortions, emotionally deregulated child pornography offenders do not report many distortions about children and sex or emotional congruence with children but some may lack empathy for victims of sexual abuse (Middleton et al., 2006).

Differences in the severity of psychological problems between these periodically prurient offenders indicate that even within this particular offending type, offenders may differ in their need for treatment.

For example, according to the risk–need–responsivity (RNR) model (Andrews & Bonta, 2007), interventions should fit offenders' learning styles, be focused on dynamic risk factors and be linked to the risk of re-offending. The first subgroup of periodically prurient offenders does not have many psychological difficulties and therefore probably does not need intensive therapy in order to refrain from engaging in child pornography offending in the future. In fact, according to the RNR model, placing these individuals in intensive treatment programs when this is not indicated can even be counterproductive. In contrast, the second periodically prurient group has multiple psychological issues related to criminal behavior and, therefore, seems at higher risk for reoffending. These child pornography offenders may need intensive therapy, such as cognitive behavioral therapy, to enhance impulse control and to provide them with better coping skills in order to deal with their negative emotions in more appropriate ways. In turn, this may lower their risk for reoffending.

4.2. Fantasy-only offenders

Pedophilic interest (Elliott & Beech, 2009) is the main motivation for fantasy-only offenders to engage in child pornography offending. Surjadi et al. (2010) showed empirical support for the existence of such a group. They found that offenders admitted that their primary motivation to access child pornography was their fixated sexual interest in children. This was also supported by the fact that this group was more likely than others to have started masturbating immediately during their first time accessing this material. However, pedophilic orientation alone does not explain why some engage in deviant sexual behavior. Although it is clear that the primary motivation to engage in child pornography for these offenders is to find an outlet for their sexual interest in children, it does not explain why they break the law and put their own feelings before those of the children depicted on the images. Therefore, fantasy-only offenders are likely to also have some features related to criminal behavior.

One important risk factor for sex offending is the adverse experiences of intimate relationships in early life. These can lead to intimacy problems and loneliness and have been found in pedophiles (Sawle & Kear-Colwell, 2001). Ward and Siegert (2002) termed this the 'Intimacy deficits' pathway that describes individuals who experience problems in establishing healthy relationships with adults due to insecure attachment (see also Bogaerts, Vanheule, & Desmet, 2006; Marshall, 1993). These individuals may express distorted cognitions about sex with children, have low social skills and low self-esteem, and are more attracted to children as sexual partners in times of loneliness or dissatisfaction with more appropriate adult relationships.

In child pornography offender research, Middleton et al. (2006) found that the 'Intimacy deficits' pathway was the most common in which 35% of the studied child pornography offenders fitted. These offenders displayed high levels of emotional loneliness and low levels of self-esteem. Unfortunately, it is impossible to state that this group also had a sexual preference for children because their sexual orientation and fixation was not measured. Furthermore, they did not report distorted cognitions with regard to views about sex with children. In treatment, these offenders would probably benefit from cognitive therapy that gives insight into their problem behavior, together with a more direct approach of enhancing their circles of support.

In line with what we argued in Section 4, it is likely that the number of psychological difficulties differs across groups of pedophiles and that some offenders may experience issues in multiple areas of functioning. For example, the 'deviant' child pornography offender group of Henry et al. (2010) included a subgroup who had issues primary related to the 'Intimacy deficits' pathway and also had features related to non-sexual offending. Compared to the other groups these offenders scored high on all risk factors for offending, including emotional congruence, cognitive distortions concerning children and sex, and distorted victim empathy. Hence, it is likely that these offenders are at high risk for

re-offending and are in need of more intensive treatment to address all relevant problem areas.

Finally, it should be noted that the 'Intimacy deficits' pathway is probably not the single pathway to child pornography offending in the fantasy-only group. However, this pathway does shed light on the importance of social behavior and (early) social relationships and suggest that social isolation and exclusion are important risk factors for offending. We will elaborate on this in the next section, where we discuss cross-over risks (i.e., the shift to sexual child abuse).

5. Risk factors for cross-over

In this last section, we distinguish between three domains of risk factors for cross-over: individual characteristics, engagement with the internet, and the offline environment. These factors partly overlap with those identified by Quayle and Taylor (2003) in their earlier described model of potential problematic internet use. However, to include all relevant risk factors, broader definitions of these domains are necessary.

5.1. Individual characteristics

The most evident risk factors for cross-over are likely those psychological characteristics known to be related to antisocial behavior in general, such as low victim empathy and cognitive distortions, because these lower behavioral inhibitions to act on impulses (Babchishin et al., 2011). Long, Alison, and McManus (2013) found that child pornography offenders who committed sexual hands-on offenses were more likely to be convicted for prior criminal behavior, specifically for nonsexual offenses like theft. These antisocial characteristics are likely risks for cross-over in periodically prurient offenders and not in fantasy-only offenders who often do not possess these characteristics. Furthermore, low inhibitory control is exactly what puts periodically prurient offenders at risk for engaging in child pornography in the first place. In turn, more self-control in fantasy-only offenders may be a protective factor against cross-over. The presence of a fantasy-only group could thus also explain findings of low rates of child sexual abuse among child pornography offenders despite the high rates of sexual deviance (Babchishin et al., 2011). In contrast, fantasy-only offenders may be more at risk for cross-over because of feelings of loneliness and low self-esteem that may be remedied by factors provided by the online environment. For example, online contact with like-minded others may encourage committing child sexual abuse. We will discuss this in more detail when describing risk factors provided by engagement with the internet.

Finally, apart from the sexual interest, the willingness to engage in behaviors that may cause direct harm to children is a prerequisite for crossing over to contact offenses. This is illustrated by the cognitive distortions that child pornography offenders use in order to minimize the moral impact that child pornographic images have on victims (e.g., "masturbation to child pornography is a substitute for abuse") (Quayle & Taylor, 2002). Some offenders have more difficulties with watching children being hurt and victimized than child sexual abusers. Some pedophiles are interested in having romantic relationships with children, and not only sexual contact (Seto, 2012), which indicates that besides sexual attraction, feelings of intimacy and love for children are also present in a subgroup of pedophilic fantasy-only offenders. In these offenders, risk of committing a contact sexual offense where they are personally responsible for the abuse seems less likely.

5.2. Engagement with the internet

There is a positive association between time spent online and number of child pornography images that child pornography offenders have collected (Quayle & Taylor, 2003). In turn, this may be associated with cross-over behavior because child pornography offenders who also

committed child sexual abuse had larger collections of child pornographic material than child pornography offenders without a history of sexual abuse (McCarthy, 2010). However, according to Long et al. (2013), not the number of images per se is critical in discriminating child sexual abusers from child pornography offenders, but rather the type and severity of the material possessed and the qualitative variation among these types. They found that although the severity of the material possessed varied greatly, many collections showed signs of anchor points that indicated the primary interest of the collector. For example, if this collection mainly concerns mildly erotic images of children the risk of engaging in child sexual abuse may be lower compared to collections mainly concerning images of explicit sexual conduct. Finally, both child pornography offenders who had committed child sexual abuse and internet-only offenders possessed more material depicting severe child sexual abuse when they had a longer history of downloading (Quayle & Taylor, 2002). This suggests that prolonged online engagement leads to habituation and heightens the need for more severe material to reach satisfaction. Eventually, imagery may not be enough for some offenders and results in acting out fantasies in real life. Indeed, some child pornography offenders who committed sexual contact offenses stated that their contact offense was an extension of their online behavior (Quayle & Taylor, 2003).

In addition, engagement with the internet may lead to online contact with other child pornography offenders. According to Krone (2004), the severity of offending increases when an offenders' network becomes more intense. For example, other child pornography offenders might provide tips and tricks about how to engage in the internet and how to avoid detection. Also, other offenders' behaviors may justify their own offenses which may result in the development of offense-supporting cognitive distortions or may reinforce already existing distorted values and ideas. Moreover, social support from others with similar interests and beliefs seems very important in explaining cross-over behavior in child pornography offenders (Quayle & Taylor, 2002). It was found that in producers of child pornography, the motivation for taking images was often that it provided online popularity and led to increases in self-esteem (Sheehan & Sullivan, 2010). This may be especially dangerous for fantasy-only offenders because they are more easily tempted to engage in cross-over offenses in order to feel better and less isolated.

Furthermore, as offenders may need to prove to others online that they are trustworthy in order to obtain material or to become a member of a certain group, the exchange of new or 'rare' material may be undeniable (Quayle & Taylor, 2003). Some offenders may feel obligated to start producing child pornography themselves and may be stimulated into fulfilling particular requests of others (Quayle & Taylor, 2002). However, although the influences of internet social contacts may contribute to the likeliness of crossing over to contact offenses, an already existing sexual interest in children seems to be a pre-condition to engage in child sexual abuse (Sheehan & Sullivan, 2010).

Finally, engagement with the internet may give access to online contact with children with whom offenders may engage in 'cybersex' (Quayle & Taylor, 2003). Although this does not necessarily lead to sexual contact abuse in the real world, it is a form of 'cyber exploitation' because it leads children to engage in varying degrees of sexually explicit conversation or activities. It also provides offenders with potential victims who may be seduced into actual sexual contact by grooming (O'Connell, 2003). The transmission of online contacts to the offline environment, in turn, may result in cross-over (Quayle & Taylor, 2003).

5.3. The offline environment

Next to access to potential online victims, research shows that offline access to children may also be a risk factor for cross-over in child pornography offenders. Child pornography producers often choose victims who are easily 'available' (Sheehan & Sullivan, 2010). Furthermore, Long et al. (2013) found that child pornography offenders who also

committed child sexual abuse were more likely to have access to children than those who did not have committed a contact offense. Victims were most often unrelated children whom offenders knew from the neighborhood (Buschman, Wilcox, Krapohl, Oelrich, & Hackett, 2010).

Finally, loneliness seems an important risk for child pornography offending. In turn, having no offline contact with others or with people who do not share pedophilic interests can be a risk factor for cross-over. Quayle and Taylor (2003) found that prolonged engagement with the internet was associated with a decline in offline contact with people. In turn, this can limit healthy evaluation of the appropriateness of offense behavior because newly developed cognitions remain unchallenged by the offline environment. Importantly, research indicates that when pedophiles also receive support from non-pedophiles, they more often have appropriate views about children's sexuality. In contrast, individuals who only have contact with other pedophiles more often acknowledge being supportive of child sexual abuse (Goode, 2010). Hence, child pornography offenders who only engage in contact with other offenders and are isolated from others with more healthy views about this type of offending, may be at greater risk for committing child sexual abuse than those who are also able to discuss their feelings with other non-pedophilic individuals in the offline environment.

6. Summary and discussion

We aimed to provide an overview of the contemporary literature on child pornography offenders in order to structure and guide future research. First, we presented the difficulties in defining child pornography and child pornography offending both legally and academically. Second, we identified child pornography offending risk factors pertaining to demographic characteristics, socio-affective difficulties, cognitive distortions, and psychosexual issues. We showed that there are several understudied risk domains, such as offenders' negative childhood experiences, early sexual behavior, and the development and onset of cognitive distortions. However, despite individual differences, it is apparent that many offenders have difficulties in one or multiple risk domains.

Third, we highlighted the heterogeneity in child pornography offenders and integrated the risk domains within particular child pornography offenders and offending types. In addition to the typology developed by Elliott and Beech (2009), we argued that individual offenders can be categorized into either periodically prurient or fantasy-only offenders by describing their risk behavior along the lines of two continua: (1) their features related to criminal behavior, and (2) their sexual deviance/fantasy. We hypothesized that periodically prurient offenders have more risk factors related to the first continuum, whereas fantasy-only offenders have risk factors mainly related to psychosexual development and hence the sexual deviance continuum. Yet, we have showed that the severity of psychological problems also differs between child pornography offenders within a particular offending type, which may have implications for treatment. Furthermore, in order to achieve a clear treatment plan for individual child pornography offenders, it is recommended to map psychological difficulties on the proposed continua instead of only ascribing offenders to a particular offending type.

Fourth, studies indicated that the heterogeneity in child pornography offenders is further reflected in risks for cross-over. Characteristics related to both antisocial behavior in general (Babchishin et al., 2011; Long et al., 2013) and social withdrawal, such as loneliness, are risk factors for cross-over to child sexual abuse. Whereas periodically prurient offenders may be vulnerable to cross-over because of their impulsive behavior, fantasy-only offenders are at risk due to feelings of loneliness and low self-esteem. With regard to environmental factors such as engagement with the internet, child pornography offenders may experience habituation through regular exposure, which results in the need

for more severe child pornographic material (Quayle & Taylor, 2002). Ultimately, for some offenders more severe material may not be stimulating enough and may turn to hands-on offenses.

Furthermore, child pornography offenders may be at risk for negative influences from like-minded others online who provide them with tips and tricks to offend and who justify sexual offenses. Also, they can reinforce distorted values and beliefs, and provide social status and support (Quayle & Taylor, 2002). This may be especially dangerous for those offenders who have less contact with non-pedophiles who could provide them with healthier views about children and sexuality (Quayle & Taylor, 2003). However, because of the stigmatization associated with pedophilia, individuals with a sexual interest in children often seek little support outside the pedophile community (Goode, 2010). Offenders with a sexual interest in children may feel safer or more at ease in disclosing their feelings to like-minded others than to non-pedophilic individuals and may therefore choose to isolate themselves from others in the 'real' world. Finally, other environmental factors such as access to children (both online and offline) are also considered risk factors for crossing over to child sexual abuse (O'Connell, 2003; Quayle & Taylor, 2003).

This review has several limitations. First, the discussed studies differed in using forensic and non-forensic child pornography offender samples. As such, these child pornography offenders may differ in the degree to which they have received treatment and this could have affected their disclosure of offense behaviors (Bourke & Hernandez, 2009). Moreover, several studies included child pornography offenders who had also committed child sexual abuse. Although we have specified this for studies in which this was the case, some results cannot be generalized to child pornography offending in non-sentenced offenders. Finally, almost all studies were solely based on self-reports. Research indicates that in studying child pornography offenders this is more reliable than using official police records (Seto et al., 2011), but still limits their disclosure of risk behavior (Bogaerts et al., 2010).

We suggest two lines of future research that follow from this literature overview. The first line needs to focus more in depth on the developmental pathways to a particular type of child pornography offending. Specifically, the integration of the hypothesized risk factors for the different child pornography offending types and their specific risk factors for cross-over deserve more attention. To this end, qualitative research such as in-depth interviews with child pornography offenders can provide valuable information. Hereby researchers should in particular focus on factors such as the type of child pornography offending, type and severity of child pornographic material, offenders' childhood characteristics, such as own experienced abuse, development and onset of cognitive distortions, and pedophilic interest (specifically the age group that offenders prefer). Currently, these factors are often overlooked in research on child pornography offending. Also, from a quantitative viewpoint, cluster analyses seem promising to assess the validity of the proposed continua to differentiate between periodically prurient and fantasy-only offenders. This differentiation can provide the field with more standardized measures and help clinicians to improve treatment planning.

The second line of future research may want to focus on non-forensic pedophiles in order to study their coping strategies to deal with their sexual preferences. With regard to sexual deviance, we showed that there is currently little information about factors that explain the relationship between pedophilia and child pornography offending. Moreover, very little is known about the etiology of sexual interest in children (Fagan, Wise, Schmidt, & Berlin, 2002). Insight into pedophilia and its relationship with child pornography offending may offer important knowledge about possible protective factors against this type of offending. Furthermore, insight into the underlying processes of pedophilia and child pornography offending may be helpful in treatment to counteract and prevent reoffending. Finally, it may eventually help pedophiles who are struggling with their feelings and desires to refrain from engaging in (non-)contact offenses.

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