

The Association of Sexual Preference and Dynamic Risk Factors with Undetected Child Pornography Offending

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Abstract

The risk for using child abuse images (CAI) is difficult to assess, especially as it mostly remains undetected by legal authorities. The present study investigates the association of aspects of sexual preference and dynamic risk factors with CAI only and mixed offending (CAI and child sexual abuse) over lifetime and within six months prior to assessment. A sample of 190 undetected, self-identified pedo- and/or hebephiles was investigated. Multinomial logistic regression analyses revealed that sexual preoccupation is of great importance, especially for recent CAI only and mixed offending, as well as lifetime mixed offending. Although inconclusive, a sexual preference for early pubescent children seems to be of interest for recent and lifetime offending. A sexual preference for prepubescent children, additional paraphilias and sexualised coping have shown some, although no statistically meaningful association with lifetime offending. Gender preference, exclusivity of pedohebephilia and offence-supportive attitudes did not show any significant relation with offending behaviour.

Introduction

Increased use of the Internet has coincided with an increase in cyber criminality, including the use of so-called child pornography, subsequently referred to as “child abuse images” (CAI) (Carr, 2004; Motivans & Kyckelhahn, 2007). In 2014, a total of 4.804 cases of dissemination, acquisition, and ownership of CAI have been recorded in Germany (Bundeskriminalamt, 2015). This constitutes about one-third of officially recorded child sexual abuse (CSA) offences in Germany. In a recent representative internet survey with a sample of German men, 2,4% reported to have used CAI (Dombert et al., 2015). Projected to the male German population above the age of 14 years, this makes for approximately 825.000 CAI offenders in the year 2014 (Indexmundi, 2015). In the USA, the ownership of CAI constitutes approximately two-thirds of CSA convictions (Motivans & Kyckelhahn, 2007). In addition, data on CAI traffic in peer-to-peer computer networks indicate that user numbers greatly exceed the number of individuals identified by arrest and that the vast majority of cases remain undetected by legal authorities (see Beier, Ahlers et al., 2009; Steel, 2009; Wetzels, 1997).

Furthermore, it is often revealed that convicted CAI offenders have committed additional CSA offences which remain unknown to judicial authorities, raising the question of the risk of CAI offenders to also directly offend against children (Seto, Hanson, & Babchishin, 2011). A recent meta-analysis showed that 12.2% of detected CAI offenders had previously committed contact sexual offences officially documented by authorities and, when referring to self-reports, 55.1% of convicted CAI offenders admitted prior contact sexual offences against children (Seto et al., 2011). However, there is evidence that pornography consumption alone may not necessarily be associated with sexually aggressive behaviour unless a confluence of other factors is involved (Malamuth, Addison & Koss, 2000). To better differentiate CAI only and mixed offenders in terms of potentially contributing risk factors might therefore improve risk assessment and treatment planning.

Sexual Preference as Risk Factor for CAI Only and Mixed Offending

In previous research, a variety of factors associated with the sexual preference structure have been analysed in terms of their potential risk for sexual offending against children. In this regard, the sexual preference for the prepubescent body of children (i.e. pedophilia) and/or the sexual preference for the early pubescent body of children (i.e. hebephilia) were revealed as important risk factors (Hanson & Morton-Bourgon, 2005). One reason to expect CAI offenders to also commit direct CSA is that the prevalence of sexual preference for children is higher among CAI offenders than among typical CSA offenders (Babchishin, Hanson, & Hermann, 2011). Also, a history of CAI offending has been found to be an important and valid diagnostic indicator of

pedophilia (Seto, Cantor, & Blanchard, 2006). In a recent meta-analysis differentiating between offender types, mixed offenders more frequently showed a sexual preference for pre- and early pubescent children than CAI only offenders (Babchishin, Hanson, & VanZuylen, 2015). Moreover, preliminary data from an undetected sample of pedo- and/or hebephiles suggest that the sexual preferences for pre- versus early pubescent children are differently associated with CAI offending. Those exclusively using sexually explicit and/or non-explicit images of children showed high rates of sexual preference for prepubescent children, whereas mixed offenders more often had a sexual preference for early pubescent children (Kuhle, 2011).

Another differentiating aspect of pedohebephilia relevant to risk assessment is whether the sexual preference for the pre- and/or early pubescent body is exclusive or whether an individual shows an additional preference for the adult body. In this regard, preliminary analyses on undetected pedohebephiles suggest that non-exclusivity of sexual preference increases the risk of undetected CAI offending when compared to non-offenders (Kuhle, Konrad & Beier, 2011; Schlinzig, 2014).

However, in terms of sexually deviant interests, Mann, Hanson & Thornton (2010) not only identified the sexual preference for children as a risk factor for CSA, but also the presence of multiple paraphilias defined as having two or more deviant sexual interests. When compared to detected CSA offenders, CAI offenders reported even higher rates of paraphilias (Seto, Wood, Bachishin, & Flynn, 2012; Seto et al., 2006).

Apart from sexual deviance, previous research has also focused on gender preference as a potential risk factor for child sexual offending. A meta-analysis by Babchishin et al. (2015) revealed that detected CAI only and mixed offenders more frequently showed a homo- or bisexual orientation than detected CSA only offenders. Seto and Eke (2015) found more CAI depicting boys in detected mixed offenders compared to CAI only offenders, suggesting that mixed offenders were more often homo- or bisexual than CAI only offenders. Besides, the ratio of images depicting boys relative to girls was predictive of sexual recidivism in detected CAI offenders. However, Neutze, Seto, Schaefer, Mundt, and Beier (2011) found no difference in the sexual gender preference between recently non-offending, recently CAI offending, and recently CSA and mixed offending within a sample of undetected pedohebephiles.

Dynamic Risk Factors for CAI Only and Mixed Offending

Although important risk factors, (deviant) aspects of the sexual preference are neither a necessary nor sufficient condition for child sexual offending. Instead, sexual offending is multiply determined and characterised by a diversity of motivations and individual propensities. To better differentiate CAI only and mixed offenders, it is important to consider other risk factors for sexual offending. In this regard, dynamic risk factors (DRF) are important when it comes to assessment of sexual offenders and planning of effective interventions (Mann et al., 2010).

Research on dynamic risk groups in sexual offenders proposed various DRF and aspects of antisociality to be of particular importance in the subgroup of sexual offenders with a sexual deviance (Seto & Fernandez, 2011). The “sexually deviant group” scored high on deviant sexual interests, sexual preoccupation, emotional identification with children, and CSA offence-supportive attitudes. While previous meta-analyses identified offence-supportive attitudes and sexual preoccupation as empirically supported risk factors for sexual offending (Hanson & Morton-Burgess, 2004; Mann et al., 2010), the importance of emotional child identification and antisociality as a risk factors is questioned in samples of undetected pedohebephiles. Emotional child identification did not differentiate undetected pedohebephiles with respect to their sexual offence history and was suggested to be rather indicative of a sexual preference for children (Konrad, Kuhle, Amelung & Beier, 2016). Similarly, antisociality seemed to be neglectable among undetected pedohebephiles, because manifestations were comparable to a sample of normal

controls from the community (Kuhle, Mohnke, Nitschke & Beier, 2012).

Studies on DRF not only reveal an association with sexual offending in general, but also with different types of child sexual offending. Thus, offence-supportive attitudes were found to be less distinct in CAI only offenders when compared with CSA and mixed offenders, which might reflect differences in the type of attitudes held (Babchishin et al., 2015; Babchishin et al., 2011; Bates & Metcalf, 2007; Elliott, Beech, Mandeville-Norden, & Hayes, 2009; Merdian, Curtis, Thakker, Wilson, & Boer, 2014; O'Brien & Webster, 2007; Quayle & Taylor, 2002; Sheldon & Howitt, 2008; Webb, Craissati & Keen., 2007). However, offence-supportive attitudes of CAI offenders are also suggested to revolve around assumptions that justify the use of the internet or child abuse images to sexually exploit children.

Sexual preoccupation is defined as a highly deviating preoccupation with sexual contents often characterized by a high frequency of sexual fantasies. Previous research underlined its importance as a risk factor for both, CAI and CSA offending (Dombert et al., 2015; Eke, Seto, & Williams, 2011; Hanson & Harris, 2000; Hanson, Harris, Scott, & Helmus, 2007; Hanson & Morton-Bourgon, 2005; Wakeling, Howard, & Barnett, 2011). Comparing different offender types, studies have found that CAI offenders show a greater sexual preoccupation than CSA offenders (Dombert et al., 2015; Elliott et al., 2009; Seto et al., 2006; Seto et al., 2012; Webb et al., 2007), and that mixed offenders compared to CAI only offenders showed more deficits in sexual regulation (Babchishin et al., 2015).

In addition, previous research showed an association of sexual preoccupation and sexualised coping (Cortoni & Marshall, 2001). According to McKibben, Proulx, and Lusignan (1994), sexual offenders reported increased deviant sexual fantasies and masturbation during periods of stress, often accompanied by more frequent sexually abusive fantasies (Cortoni & Marshall, 2001). Further, Mann et al. (2010) identified sexualised coping as an important psychological risk factor for sexual recidivism, with CAI users showing a higher degree of sexualised coping than CSA offenders.

In summary, previous research on the differentiation of CAI only and mixed offenders might be limited in various ways. First, the majority of studies are based on samples of detected offenders. Considering the vast amount of undetected cases of child sexual offending, group samplings based on detected offences might result in biased offender groups. For example, detected CAI only offenders might also encompass mixed offenders with undetected CSA offences. This in turn might result in an over- or underestimation of risk in CAI only offenders. Second, previous research on potentially changeable DRF did not differentiate between recent and lifetime offender status and thereby specify the temporal connection between the manifestation of DRF and CAI offending. Therefore, comparisons between non-, CAI only and mixed offenders in samples of undetected pedohebephiles can be beneficial when estimating the level of risk to gain more insight into the phenomenon of CAI only offending.

The present study

In the present study a model-based approach was applied to differentiate recent and lifetime non-, CAI only and mixed offenders in a sample of undetected pedohebephiles. The associations of sexual preference for pre- and/or early pubescent children, exclusivity of pedohebephilia, gender preference, the number of additional paraphilias and DRF (i.e., offence-supportive attitudes, sexual preoccupation, sexualised coping) with recent and lifetime non-, CAI only and mixed offending were determined applying multinomial logistic regression analyses. By using a model-based approach, factors could be adjusted to each other in order to detect factors that uniquely help to predict group membership. To account for the dynamic character of the manifestations of DRF, potentially differing associations of DRF with recent and lifetime CAI offending were analysed. Previous research on sexual offending against children predominantly relied on samples of

detected offenders and focused on sexual behaviour, rather than sexual preference according to formal diagnostic criteria. Therefore, the present study aims to examine the generalisability of previously determined risk factors within a sample of undetected pedohebephiles. Using a sample of undetected offenders further allowed for the reduction of biased CAI only offender groups. Based on previous research, we expected a sexual preference for early pubescent children, non-exclusivity, non-heterosexuality, additional paraphilias and the manifestation of DRF to be associated with mixed offending, in contrast to CAI only and non-offending. In addition, DRF were assumed to be more strongly associated with recent than with lifetime offending.

Methods

Procedure

Data were collected between 2005 and 2014 as part of an ongoing project offering diagnostic assessment and therapy to men with a problem awareness of their sexual preference for children to prevent primary or recurrent CSA as well as CAI (re-)offences. With the help of a media campaign, men in the general population feeling sexually attracted towards children were offered anonymous and confidential diagnostic expertise and cognitive-behavioural therapy free of charge (Beier, Neutze et al., 2009; Schaefer et al., 2010). Those who entered the project underwent a multistage diagnostic procedure consisting of clinical interviews and assessments via questionnaires to collect information on the individual's sexual preference, sexual history including lifetime and recent offending behaviour (CSA and/or CAI), as well as the manifestation of DRF. All data were anonymised. The present study was approved by the Institutional Review Board of the University Clinic, where participants were assessed and treated. All participants gave informed consent.

Participants

A total of 190 men above the age of 18 years who provided complete data on relevant measures, and who were diagnosed with pedophilia and/or "paraphilia not otherwise specified" in case of hebephilia according to DSM-IV-TR criteria (APA, 2000) were included in the study. Current legal charges concerning CSA and/or CAI offences, and acute mental disorders with need for immediate treatment were defined as exclusion criteria.

In terms of sociodemographic information, the mean age of the sample was $M = 36.67$ ($SD = 10.77$), ranging from 18 to 66 years. At the time of assessment, 66.8% of the sample were employed or studying, and 56.3% reported higher educational achievements (more than ten school years). More than half of the men (62.1%) were not in a relationship at the time of assessment, and 28.9% reported to be responsible for a child independent of relationship status.

Applying DSM-IV-TR (APA, 2000) diagnostic criteria for paraphilias, participants were diagnosed as having either a pedophilia or a hebephilia on the basis of their self-reported sexual fantasies involving children. Pedophilia was diagnosed if the person reported recurrent and intense sexual thoughts, fantasies, or urges involving prepubescent children over a period of at least six months. Hebephilia was diagnosed if the participant reported that early pubescent, rather than prepubescent children were the focus of sexual fantasies. Since hebephilia is not specifically recognized in the DSM-IV-TR, the criteria for the diagnosis of "paraphilia not otherwise specified" was used. Furthermore, an exclusive pedophilia and/or hebephilia was coded if a person reported recurrent and intense sexual thoughts, fantasies, or urges exclusively involving pre- and/or early pubescent children, denying any fantasies involving adults (teleiophilia). In addition to the exclusive types of sexual preference for a prepubescent, an early pubescent or an adult body scheme, men report several fantasized body schemes, e.i. proportionally existing sexual fantasies regarding the prepubescent and the early pubescent body age. Regarding the sexual preference for children and its different combinations, $n = 32$ (16.8%) participants reported a pedophilic preference, $n = 17$

(8.9%) a hebephilic preference, $n = 16$ (8.4%) a pedo-hebephilic preference, and $n = 13$ (6.8%) a pedo-teleiophilic preference. The majority of men ($n = 73$; 38.4%) were diagnosed with a hebe-teleiophilic preference, and the remaining $n = 39$ (20.5%) with a pedo-hebe-teleiophilic preference. Altogether $n = 65$ (34.2%) participants reported an exclusive sexual preference for pre- and/or early pubescent children. Regarding sexually preferred gender, the majority of men preferred girls ($n = 112$; 58.9%), and $n = 78$ (41.1%) men referred to themselves as homo- or bisexual. Most of the participants ($n = 129$; 77.9%) reported at least one additional paraphilic preference. The sum of additional paraphilias ranged from 1 to 7, with $M = 1.45$ ($SD = 1.47$).

In terms of sexually abusive behaviour, $n = 44$ (23.2%) participants reported to be non-offenders within the last 6 months, while $n = 102$ (53.7%) reported to be CAI only offenders, and $n = 44$ (23.2%) men reported to be mixed offenders. With regard to lifetime offending, $n = 11$ (5.8%) participants reported to be non-offenders, while $n = 97$ (51.1%) reported to be CAI only offenders, $n = 11$ (5.8%) to be CSA only offenders and $n = 71$ (37.4%) men reported mixed offences over the lifespan.

Measures

The semi-structured clinical interview contained a comprehensive sexual history exploring sexual preference by identifying the individual's sexual fantasies during masturbation, especially the preferred body age, gender, and sexual interactions. Each manifestation of sexual preference for children was coded corresponding to the respective combination of body preferences, but later transformed into dichotomous variables due to statistical considerations. Hence, two independent variables were coded: *pedophilia* (including a pedophilic, pedo-hebephilic, pedo-teleiophilic and pedo-hebe-teleiophilic preference) and *hebephilia* (including a hebephilic, pedo-hebephilic, hebe-teleiophilic and pedo-hebe-teleiophilic preference).

Sexual gender preference was coded as *heterosexual* and *non-heterosexual* (including homo- and bisexual) according to the gender that figured predominantly in the participant's sexual fantasies during masturbation, irrespective of age.

Additional paraphilic preferences were assessed via the subscale *Sexual Preferences* of the *Questionnaire on Sexual Experiences and Behavior* (Q-SEB; Ahlers, Schaefer, & Beier, 2004). For this study, 12 items referring to specific paraphilias, ranging from 1 (not at all arousing) to 5 (very arousing) were considered. Only paraphilias manifesting in fantasies during masturbation were included. The presence of additional paraphilias was coded starting at a value of 3 (medium arousing). Cronbach's alpha for this study was $\alpha = .69$. Additional paraphilias were not considered individually, but as a categorical variable according to whether the individual reported at least one additional paraphilia or not.

To assess DRF, the following self-report measures were used: (1) Sexual Behavior Involving Minors Scale (SBIMS; Neutze, 2005) - Masturbation Frequency. The SBIMS - Masturbation Frequency is an unpublished 4-item inventory assessing sexual preoccupation in terms of frequency of masturbation to sexual fantasies involving minors within the previous 6 months. Occurrence of fantasised sexual interactions is rated on a 5-point Likert scale, ranging from 1 (never) to 5 (daily). Values range from 4 to 20. Cronbach's alpha for this study was $\alpha = .78$. (2) Coping Using Sex Inventory (CUSI; Cortoni & Marshall, 2001; German version: Feelgood & Freese, 2004). The CUSI assesses sexualised coping with 16 items focusing on the use of sex in stressful situations on four levels (fantasy, masturbation, CAI use, sexual interaction with a partner). Items are rated on a 5-point Likert scale, ranging from 1 (never) to 5 (very often) with sum scores ranging from 16 to 80. Cronbach's alpha for this study was $\alpha = .83$. (3) Bumby Molest Scale (BMS; Bumby, 1996; German version: Schaefer et al., 2005). The BMS is a 38-item scale measuring maladaptive cognitions and offence-supportive attitudes in favor of CSA. Statements about children and sex with children are rated on a 4-point Likert scale, ranging from 1 (strongly disagree) to 4 (strongly agree). Values range from 38 to 152. Higher scores indicate more offence-

supportive attitudes and a greater tendency to justify sexual offending. Cronbach's alpha for this study was $\alpha = .96$.

Sexual offending behaviour against children (CSA and/or CAI) within the previous 6 months was measured using the following two self-report questionnaires: (1) *Sexual Behavior Involving Minors Scale* (SBIMS; Neutze, 2005) – *Child sexual abuse*. The SBIMS - Child Sexual Abuse is a subscale of the SBIMS inventory with 3 items measuring the frequency of sexual behaviours, including non-corporeal sexual interactions, sexual activities in the presence of a minor, and sexual contacts with a minor over the previous 6 months. Items are rated on a 5-point Likert scale, ranging from 1 (never) to 5 (daily). Values range from 3 to 15. Occurrence of CSA within the last 6 months was coded starting at a value of 4. Cronbach's alpha for this study was $\alpha = .99$. (2) Questionnaire for Sexually Explicit and Non-Explicit Images of Children and Adults (Q-SENICA; Neutze, 2005). The Q-SENICA is an unpublished questionnaire assessing the use of sexually explicit and non-explicit images of minors and adults within the previous 6 months. For this study, 20 items on the consumption frequency of CAI were used, each coded on a 5-point Likert scale ranging from 1 (never) to 5 (daily). Cronbach's alpha for this study was $\alpha = .94$.

Item responses on the SBIMS - Child Sexual Abuse Scale and Q-SENICA were utilized to group individuals according to their sexual offending behaviours within the previous 6 months into (1) non-offenders, (2) CAI only offenders, and (3) mixed offenders.

Lifetime sexual offending against children (CSA and/or CAI) was assessed during the semi-structured clinical interview. The occurrence of at least one committed CSA and/or use of CAI at least once over the lifespan were sufficient for coding lifetime sexual offending behaviour, regardless of possible criminal prosecution. Therefore, recent non-offenders could potentially be lifetime CAI only, CSA only and mixed offenders. Because the present study focused on the analysis and differentiation of CAI offending, CSA only and non-offenders were merged into the group of non-offenders. The lifetime offender group sampling is therefore similar to recent offender group sampling, with (1) non-offenders, (2) CAI only offenders, and (3) mixed offenders.

For the presentation in this article, sum scores for all scales were calculated such that higher scores reflect greater deficits. All reliabilities refer to the German translations of the scales.

Statistical Analysis

Preliminary analyses were conducted to compare recent offender groups with respect to sociodemographic variables by calculating Pearson's chi-square tests to eliminate a possible impact on offender group membership. Regarding age, an analysis of variance was performed.

To analyse the association of sexual preference (pedophilia, hebephilia and their exclusivity, gender preference, additional paraphilias) and DRF (sexual preoccupation, sexualised coping, offence-supportive attitudes) on recent (within the last six months) and lifetime offending behaviour, multinomial logistic regressions were performed. According to Harrell (2001), about 8 to 16 predictors are recommended for a nominal regression with $n = 190 (= 44 + 102 + 44)$ observations. Thus, all 8 risk factors were implemented in a single model as main effects adjusting to each other. To obtain a simple model with high predictive ability, a stepwise backwards selection using the Akaike information criterion (AIC) was performed (see Harrell, 2001). Models with a lower AIC were favored. To assess model fit, Pseudo- R^2 measure (McFadden) was used.

Statistical significance was initially set at $p < .05$. Due to multiple comparisons when evaluating the significance of parameter estimates, the Bonferroni-Holm procedure was applied to interpret all models and their associated parameters (excluding intercepts). Reported p-values are unadjusted and significance after Bonferroni-Holm correction is marked. Analyses were only conducted with complete datasets. Calculations were done using SPSS (V 22) and R (V 3.2.2; Core Team, 2015) including the packages VGAM (Yee, 2015; Yee, Stoklosa & Huggings, 2015) and nnet (Venables & Ripley, 2002).

Results

Regarding recent offending, preliminary analyses showed that recent offender groups did not differ statistically significant on sociodemographic data, including age ($F(2, 190) = 0.11, p = .895$), education ($\chi^2(2, 190) = 0.95, p = .623$), employment status ($\chi^2(2, 190) = 1.86, p = .395$), relationship status ($\chi^2(2, 190) = 2.91, p = .234$) and responsibility for a child ($\chi^2(2, 190) = 0.66, p = .720$).

Regarding lifetime offending, groups did also not differ statistically significant on sociodemographic data, including age ($F(2, 190) = 1.81, p = .167$), education ($\chi^2(2, 190) = 1.59, p = .452$), employment status ($\chi^2(2, 190) = 1.67, p = .434$), relationship status ($\chi^2(2, 190) = 5.36, p = .069$) and responsibility for a child ($\chi^2(2, 190) = 0.11, p = .947$).

Recent sexual offending against children. With regard to recent sexual offending, results of the full multinomial logistic regression including all 8 risk factors (fRC-Model; McFadden Pseudo- $R^2 = 0.21$) are shown in Table 1.

The fRC-model demonstrates that with increasing sexual preoccupation, the probability of being a recent CAI only offender compared to recent non-offenders significantly increased (OR = 1.37; 95%-CI: 1.16 – 1.61; $p = .000$). The same is true for the probability of being a recent mixed offender compared to recent non-offenders (OR = 1.66; 95%-CI: 1.38 – 1.99; $p = .000$), whereas the effect was more pronounced here. Moreover, with increasing sexual preoccupation, the probability of being a recent CAI only offender compared to recent mixed offenders significantly decreased (OR = 0.83; 95%-CI: 0.75 – 0.90; $p = .000$). For the remaining parameters, no significant association with recent sexual offending was found.

After stepwise backwards selection using AIC (results shown in Appendix A), the risk factors sexual preoccupation and hebephilia remained as predictors for recent offending in the reduced model (sRC-Model; McFadden Pseudo- $R^2 = 0.18$). Associated parameters of the sRC-model are shown in Table 2.

The sRC-model demonstrates that with increasing sexual preoccupation, the probability of being a recent CAI only offender compared to recent non-offenders significantly increased (OR = 1.40; 95%-CI: 1.20 – 1.63; $p = .000$), as did the probability of being a recent mixed offender compared to recent non-offenders (OR = 1.69; 95%-CI: 1.43 – 2.01; $p = .000$). Moreover, the probability of being a recent CAI only offender compared to recent mixed offenders significantly decreased (OR = 0.83; 95%-CI = 0.76 – 0.90; $p = .000$) with increasing sexual preoccupation.

In addition, having a hebephilic sexual preference significantly increased the probability of being a recent CAI only offender compared to recent non-offenders (OR = 4.52; 95%CI: 1.79 – 11.39; $p = .001$), as well as being a recent mixed offender compared to recent non-offenders, with (OR = 6.53; 95%-CI: 1.91 – 22.33; $p = .003$). Having a hebephilic sexual preference did not, however, significantly increase the probability of being a recent mixed offender compared to recent CAI only offenders (OR = 0.69, 95%-CI: 0.26 – 1.85; $p = .462$).

Lifetime sexual offending against children. Concerning lifetime sexual offending, results of the full multinomial logistic regression including all 8 risk factors (fLT-Model; Mc-Fadden Pseudo- $R^2 = 0.17$) are shown in Table 3. The fLT-Model shows that with increasing sexual preoccupation, the probability of being a lifetime mixed offender compared to lifetime non-offender significantly increased (OR = 1.39; 95%-CI: 1.16 – 1.66; $p = .000$). Moreover, the probability of being a lifetime CAI only offender compared to lifetime mixed offenders significantly decreased (OR = 0.85; 95%-CI: 0.79 – 0.92; $p = .000$). For the remaining parameters, no significant association with lifetime

sexual offending was found.

After stepwise backwards selection using AIC (results shown in Appendix B), the risk factors sexual preoccupation, pedophilia, hebephilia, having at least one additional paraphilia, and sexualised coping remained as predictors of lifetime sexual offending in the selected model (sLT-Model; McFadden Pseudo-R² = 0.15). Model parameters of the sRC-model are shown in Table 4.

After Bonferroni-Holm correction, only sexual preoccupation remained as a statistically significant predictor of lifetime offending: With increasing sexual preoccupation the probability of being a lifetime mixed offender compared to lifetime non-offenders significantly increased (OR = 1.38; 95%-CI: 1.16 – 1.64; p = .000). The probability of being a lifetime CAI only offender compared to lifetime mixed offenders significantly decreased with an increasing sexual preoccupation (OR = 0.84; 95%-CI: 0.78 – 0.91; p = .000). The influence of an increasing sexual preoccupation was, however, not statistically significant for the comparison of lifetime CAI only offenders and lifetime non-offenders (OR = 1.16; 95%-CI = 0.98 – 1.37; p = .091). For the remaining parameters, no significant association with lifetime sexual offending was found.

Discussion

The present study examined the impact of various aspects of sexual preference and DRF on CAI offending in undetected pedohebephiles applying multinomial logistic regressions followed by a variable selection. Full and selected models of recent and lifetime offending revealed that sexual preoccupation was highly associated with sexual offending against children and therefore needs to be considered an important risk factor. The sexual preference for early pubescent children showed a significant association with recent but not with lifetime offending after backward selection. The sexual preference for prepubescent children, additional paraphilias and sexualised coping were not significantly associated with recent and lifetime offending, but remained in the sLT-model. The remaining factors (exclusivity of pedohebephilia, gender preference and offence-supportive attitudes) did not show any significant relations and were not selected in either model.

Sexual Preoccupation is highly associated with sexual offending against children

Regarding the notable association of sexual preoccupation with sexual offending within the last six months, enhanced scores resulted in a higher probability to belong to the group of mixed offenders when compared to non- (OR 1.7) and CAI only offenders (OR 1.2), as well as a higher probability to belong to the group of CAI only when compared to non-offenders (OR 1.4). Seen on a larger time scale, increased sexual preoccupation resulted in a greater association with lifetime mixed offending when compared to non- (OR 1.4) and CAI only offenders (OR 1.2) but did not differentiate between non- and CAI only offenders (OR 1.2) anymore. Considering the strengths of relationship (odds ratios), data revealed that the association of sexual preoccupation with recent sexual offending is stronger than with lifetime offending. This is supported by decreased McFadden Pseudo-R²-values for the fLT- (0.168) and sLT-model (0.148) when compared to the recent models (fRC-model: 0.210; sRC-model: 0.184). This is in line with the dynamic and therewith changeable manifestation of sexual preoccupation and suggests a greater temporal connection with offending behaviour. The constant level of odds ratios in the full and selected models suggests the relationship between sexual preoccupation and CAI only and mixed offending to be unaffected by the aspects of sexual preference and other DRF. The association is underlined by the fact that the McFadden Pseudo-R² is decreased only by 0.026 after selection of the fRC-model.

In addition, sexual preoccupation seems to be associated with mixed offending in general and only differentiates CAI only and non-offenders on a more acute level. This might suggest that mixed offenders have a generally increased level of sexual preoccupation (i.e. trait) indicating their high

risk to offend, whereas CAI only offenders might be more dynamic in their levels (i.e. state). Compared to non-offenders, CAI only offenders are more sexually preoccupied solely when CAI offending occurred with proximity of time (i.e. within the previous six months prior to assessment). These results are in line with previous cross-sectional studies on sexual preoccupation as a risk factor for child sexual offending that suggested mixed offenders to be a particularly high risk group when compared to CSA only and CAI only offenders (Babchishin et al., 2015; Dombert et al. 2015). However, correlations of DRF with past offending behaviour does not allow for assumptions of causation. Therefore, the present study cannot clarify whether increased sexual preoccupation resulted in sexual offending or vice versa. Nonetheless, studies correlating sexual preoccupation with retrospective and prospective sexual offences reveal sexual preoccupation to be highly associated (Babchishin et al., 2015; Dombert et al., 2015; Hanson et al., 2007; Hanson & Harris, 2000; Hanson & Morton-Bourgon, 2005; Mann et al., 2010). Besides, our findings are compatible with neurobiological studies showing brain structural and functional deficits in regions associated with sexual disinhibition (e.g., loss of impulse control) and emotion regulation in samples of offending pedophiles (see Tenbergen et al., 2015). Hence, sexual preoccupation is associated with the severity of CAI offending (in terms of mixed offending) and needs to be regarded as a particularly important risk factor the differentiation of CAI only and mixed offending.

Sexual Preference for Early Pubescent Children and Sexual Offending against Children

Results implicate the sexual preference for early pubescent children to be associated with recent CAI offending behaviour. In the fRC-model, hebephilia was not significant after correction for multiple testing. Nonetheless, the odds ratios are very high when comparing CAI only (OR 6.2) and mixed offenders (OR 8.8) to non-offenders. In the sRC-model, hebephilia was significantly associated with CAI only and mixed offending when compared to non-offending. Nevertheless, respective confidence intervals were very broad. This might be due to the relatively small number of hebephilic men in the group of recent non-offenders. Thus, to consider hebephilia to be an important risk factor when it comes to CAI only and mixed offending is difficult. In the fLT- and sLT-models, the interpretation is equally inconclusive, because hebephilia did not show any statistical significance. Nonetheless, the data suggest that a sexual preference for early pubescent children is associated with recent and lifetime sexual offending against children. Data from a partially overlapping sample suggested a similar association for lifetime offenders (Beier et al., 2015). Konrad et al. (2016) suggested risk factors to be differentially distributed between men with a sexual preference for pre- or early pubescent children.

Non-influencing Factors for Sexual Offending

When implemented in the fRC- and fLT-model with main effects adjusted for each other, the parameters of the exclusivity of pedohebephilia, non-heterosexuality, additional paraphilias, offence-supportive attitudes and sexualised coping showed no statistically significant association with CAI only and mixed offending. Moreover, none of these parameters remained in the sRC-model and therefore had no explanatory value for offending behaviour beyond sexual preoccupation and the sexual preference for early pubescent children. However, the sLT-model revealed the sexual preference for prepubescent children, additional paraphilias and sexualised coping to be of interest when assessing lifetime sexual offending, although the association was not statistically significant.

The fact that only sexual preoccupation and hebephilia remained to be relevantly associated with CAI offending might seem surprising. However, these results are in partial accordance with previous research on lifetime offending. Recent meta-analytic findings showed that, apart from pedohebephilia, additional paraphilias, offence-supportive attitudes and poor

coping skills did not differentiate between detected CAI only and mixed offenders (Babchishin et al., 2015). A study based on a sample of undetected pedohebephiles showed that recent non-offenders, undetected CAI only and mixed offenders were similar on scores of offence-supportive attitudes and did not differ in their sexual gender preference (Neutze et al, 2011).

The diverging findings might be due to differences in the sample composition of undetected individuals with a sexual preference for minors as opposed to samples of detected offenders with mixed sexual preferences: The variance of sexually preferred body schemes in the present study was smaller when compared to studies examining detected sexual offenders which also included teleiophiles (i.e. men with an exclusive preference for adult bodies). Hence, the statistical influence of pedophilia and of the apparently related non-heterosexuality may have been reduced in samples of detected offenders. Regarding non-heterosexuality, the present study might reveal a systematic bias in studies among convicted offenders: Given that convicted offenders are more likely to deny a sexual preference for children (see Seto, 2009) and that the prevalence of homo- and bisexuality in pedohebephiles is increased compared to the general population (see Beier et al., 2015; Chandra, Mosher, Copen, & Sionean, 2011; Herbenick, Reece, Schick, Sanders, Dodge, & Fortenberry, 2010; Neutze et al., 2011), the heightened prevalence of non-heterosexual mixed offenders (Babchishin et al., 2015) might be attributable to an undisclosed sexual preference for children in this group. In addition, the pooling of homo- and bisexuality may blur the effect of particular gender preferences as potential risk factors.

Regarding the missing influence of the exclusivity of pedohebephilia on CAI and mixed offending, the amount of sexually preferred bodies might in fact be more relevant for risk prediction than exclusivity per se. This is suggested by Kuhle et al. (2011), who showed that with increasing variability of preferred body schemes, the risk of using sexually explicit and non-explicit images of children equally increases.

Limitations & Future Research

Several limitations constrain the interpretability of the results of the current study. Due to the limited sample size, only a reduced set of DRF and not every manifestation of sexual preference for children could be studied individually. Analysing each manifestation of a pedophilic and/or hebephilic sexual preference separately could have deepened the understanding of their risk potential. Nonetheless, the number of implemented variables was appropriate considering the sample size.

The present study was based on a sample of help-seeking and problem-aware pedohebephiles striving to change their sexual behaviours. Because these characteristics presumably do not apply to all undetected pedohebephiles and/or CAI offenders, the drawn implications primarily account for those.

In terms of all full and selected models, only the fRC-model showed moderate model fit. However, the sRC-model's fit was sufficient considering that only 2 out of 8 parameters remained after selection. Both lifetime models demonstrated a rather poor model fit. However, the interpretation of sexual preoccupation as the most interesting parameter remained unaffected. This might be due to the fact that further explaining variables were not included in the present analysis.

The cross-sectional and exploratory nature of the present data limits assumptions about causal relations, especially as assessed DRF are correlated with sexual offences committed in the past and not with future offending behaviour. For a better understanding of the origins of child sexual offending in general and CAI only and mixed offending in particular, longitudinal study designs involving multiple assessments of the study variables are needed, especially as regards the analysis of future offending behaviour. Future research should also include a wider range of (dynamic) risk factors and rely on both, self-reports and objective measures. Those factors should be implemented using model-based approaches.

In addition, the operationalisation of sexual preoccupation lacks clarity and future research is needed to specify the effect on child sexual offending. Besides, offender group allocations might lack specificity because CAI and CSA offending cover a wide range of behaviours with differing frequency and severity. Therefore, future research should analyse whether DRF not only predict CAI and CSA offending but whether they are also able to differentiate the severity of particular offending behaviours.

Whereas the present results are comparable with previous research on offence-supportive attitudes in CAI only and mixed offenders, future studies should also include assessments of CAI-supportive attitudes specific to CAI offenders (e.g. "Child abuse images already exist and I do not harm a child by just watching them.") in order to evaluate whether CAI only and mixed offenders also differ in CAI-supportive attitudes.

Implications

The central finding of this study was that sexual preoccupation is of utmost importance as a risk factor for sexual offending against children and that it is strongly associated with former lifetime mixed offending and recent CAI only and mixed offending. Mixed offenders are the most sexually preoccupied and appear to be rather stable in their manifestation. In contrast, data suggest that CAI only offenders show an increased sexual preoccupation in temporal proximity with their image use. Therefore, therapeutic interventions aiming to prevent CAI only and mixed offending by addressing DRF should focus on strategies to successfully regulate sexual preoccupation and accompanied behavioural impulses in order to improve self-management (Ward, Hudson, & Keenan, 1998). Becoming more aware of their sexual fantasies might help individuals to evaluate their risk and take responsibility for their sexual behaviours.

The present study also underlines the importance of differentiated diagnostics regarding a sexual preference for children. Being highly associated with child sexual offending, a sexual preference for early pubescent children, i.e. hebephilia, should be assessed separately in terms of risk assessment and treatment planning. Since an individual's sexual preference is assumed to remain stable over lifetime and demands a lifelong sexual self-regulation and behavioural control, the need for preventive interventions is emphasized.

Tables

Table 1. Full multinomial logistic regression for all risk factors in a single model as main effects with regard to recent sexual offending (fRC-model; $N = 190$).

	<i>b</i> (SE)	<i>p</i>	95% CI for Odds Ratio		
			Lower Bound	Odds Ratio	Upper Bound
<i>CAI only vs. non-offender^a</i>					
Intercept	-4.16 (1.34)	.002			
Non-heterosexuality	0.44 (0.45)	.323	0.65	1.56	3.74
Pedophilia	0.51 (0.54)	.343	0.58	1.67	4.79
Hebephilia	1.82 (0.62)	.004	1.82	6.18	21.01
Exclusivity	-0.25 (0.50)	.611	0.29	0.78	2.07
Additional paraphilias	0.32 (0.44)	.459	0.59	1.38	3.26
Sexual preoccupation	0.31 (0.08)	.000*	1.16	1.37	1.61
Sexualised coping	0.04 (0.03)	.139	0.99	1.04	1.11
Offence-supportive attitudes	-0.01 (0.01)	.572	0.97	0.99	1.02
<i>Mixed offender vs. non-offender^a</i>					
Intercept	-8.47 (1.71)	.000			
Non-heterosexuality	0.59 (0.58)	.307	0.58	1.81	5.63
Pedophilia	0.49 (0.66)	.461	0.45	1.63	5.98
Hebephilia	2.17 (0.82)	.008	1.76	8.78	43.87
Exclusivity	-0.29 (0.65)	.658	0.21	0.75	2.67
Additional paraphilias	-0.31 (0.56)	.585	0.25	0.74	2.20
Sexual preoccupation	0.50 (0.09)	.000*	1.38	1.66	1.99
Sexualised coping	0.04 (0.04)	.285	0.97	1.04	1.12
Offence-supportive attitudes	0.01 (0.02)	.492	0.98	1.01	1.04

CAI only vs. mixed offender^A

Intercept	4.31 (1.22)	.000			
Non-heterosexuality	-0.15 (0.45)	.740	0.36	0.86	2.08
Pedophilia	0.02 (0.47)	.962	0.41	1.02	2.57
Hebephilia	-0.35 (0.65)	.587	0.20	0.70	2.50
Exclusivity	0.03 (0.50)	.948	0.39	1.03	2.74
Additional paraphilias	0.63 (0.42)	.130	0.83	1.88	4.23
Sexual preoccupation	-0.19 (0.05)	.000*	0.75	0.83	0.90
Sexualised coping	0.01 (0.03)	.854	0.96	1.01	1.06
Offence-supportive attitudes	-0.02 (0.01)	.105	0.96	0.98	1.00

Note. * Significant result after Bonferroni-Holm correction. ^A = Reference category.

Table 2. Multinomial logistic regression after stepwise backward selection using AIC with regard to recent sexual offending (sRC-model; $N = 190$).

	b (SE)	p	95% CI for Odds Ratio		
			Lower Bound	Odds Ratio	Upper Bound
<i>CAI only vs. non-offender^A</i>					
Intercept	-2.99 (0.80)	.000			
Sexual preoccupation	0.34 (0.08)	.000*	1.20	1.40	1.63
Hebephilia	1.51 (0.47)	.001*	1.79	4.52	11.39
<i>Mixed offender vs. non-offender^A</i>					
Intercept	-6.37 (1.03)	.000			
Sexual preoccupation	0.53 (0.09)	.000*	1.43	1.69	2.01
Hebephilia	1.88 (0.63)	.003*	1.91	6.53	22.33
<i>CAI only vs. mixed offender^A</i>					
Intercept	3.38 (0.74)	.000			
Sexual preoccupation	-0.19 (0.04)	.000*	0.76	0.83	0.90
Hebephilia	-0.37 (0.50)	.462	0.26	0.69	1.85

Note. * Significant result after Bonferroni-Holm correction. ^A = Reference category.

Table 3. Full multinomial logistic regression for all risk factors in a single model as main effects with regard to lifetime sexual offending (fLT-model; $N = 190$).

	b (SE)	p	95% CI for Odds Ratio		
			Lower Bound	Odds Ratio	Upper Bound
<i>CAI only vs. non-offender^A</i>					
Intercept	-3.83 (1.88)	.042			
Non-heterosexuality	-0.59 (0.55)	.285	0.19	0.56	1.63
Pedophilia	2.19 (1.11)	.048	1.02	8.97	78.97
Hebephilia	2.59 (1.15)	.024	1.40	13.32	127.07
Exclusivity	-0.53 (0.61)	.383	0.18	0.59	1.95
Additional paraphilias	0.54 (0.58)	.352	0.55	1.72	5.36
Sexual preoccupation	0.17 (0.09)	.064	0.99	1.18	1.41
Sexualised coping	0.07 (0.04)	.071	0.99	1.08	1.16
Offence-supportive attitudes	-0.01 (0.02)	.716	0.96	0.99	1.03
<i>Mixed offender vs. non-offender^A</i>					
Intercept	-6.60 (1.99)	.001			
Non-heterosexuality	-0.28 (0.59)	.629	0.24	0.75	2.38
Pedophilia	2.11 (1.13)	.062	0.90	8.24	75.36
Hebephilia	3.04 (1.19)	.010	2.05	20.99	214.74
Exclusivity	-0.06 (0.65)	.933	0.26	0.95	3.40
Additional paraphilias	-0.24 (0.62)	.702	0.23	0.79	2.66
Sexual preoccupation	0.33 (0.09)	.000*	1.16	1.39	1.66
Sexualised coping	0.05 (0.04)	.209	0.97	1.05	1.14
Offence-supportive attitudes	0.10 (0.02)	.581	0.98	1.01	1.04

CAI only vs. mixed offender^A

Intercept	2.77 (0.98)	.005			
Non-heterosexuality	-0.30 (0.38)	.423	0.35	0.74	1.55
Pedophilia	0.08 (0.40)	.833	0.50	1.09	2.39
Hebephilia	-0.45 (0.52)	.382	0.23	0.64	1.76
Exclusivity	-0.48 (0.42)	.254	0.27	0.62	1.41
Additional paraphilias	0.78 (0.36)	.030	1.08	2.18	4.40
Sexual preoccupation	-0.16 (0.04)	.000*	0.79	0.85	0.92
Sexualised coping	0.02 (0.02)	.376	0.98	1.02	1.07
Offence-supportive attitudes	-0.02 (0.01)	.119	0.97	0.99	1.00

Note. * Significant result after Bonferroni-Holm correction. ^A = Reference category.

Table 4. Multinomial logistic regression after stepwise backward selection using AIC with regard to lifetime sexual offending (sLT-model; $N = 190$).

	<i>b</i> (<i>SD</i>)	<i>p</i>	95% CI for Odds Ratio		
			Lower Bound	Odds Ratio	Upper Bound
<i>CAI only vs. non-offender</i>					
Intercept	-4.82 (1.62)	.003			
Pedophilia	2.02 (1.09)	.063	0.90	7.57	63.84
Hebephilia	2.80 (1.13)	.013	1.80	16.44	150.06
Additional paraphilias	0.60 (0.57)	.295	0.60	1.82	5.54
Sexual preoccupation	0.15 (0.09)	.091	0.98	1.16	1.37
Sexualised coping	0.08 (0.04)	.036	1.01	1.08	1.17
<i>Mixed offender vs. non-offender</i>					
Intercept	-6.29 (1.69)	.000			
Pedophilia	2.09 (1.11)	.059	0.92	8.10	71.20
Hebephilia	3.02 (1.16)	.009	2.18	20.54	199.30
Additional paraphilias	-0.18 (0.61)	.775	0.25	0.84	2.78
Sexual preoccupation	0.32 (0.09)	.000*	1.16	1.38	1.64
Sexualised coping	0.06 (0.04)	.124	0.98	1.06	1.50
<i>CAI only vs. mixed offender</i>					
Intercept	1.47 (0.77)	.057			
Pedophilia	-0.07 (0.39)	.859	0.44	0.93	1.99
Hebephilia	-0.22 (0.47)	.637	0.32	0.80	2.02
Additional paraphilias	0.77 (0.35)	.028	1.09	2.16	4.30
Sexual preoccupation	-0.17 (0.04)	.000*	0.78	0.84	0.91
Sexualised coping	0.02 (0.02)	.333	0.98	1.02	1.06

Note. * Significant result after Bonferroni-Holm correction.

Appendix 1. Summary of backward selection using AIC in regard to recent sexual offending (N=190).

	AIC
Start	339,31
<i>After removing predictor variable ...</i>	
Exclusivity	335,59
Paedophilia	332,45
Non-heterosexuality	329,53
Sexualised coping	327,75
Additional paraphilias	326,83
Offence-supportive attitudes	325,79

Appendix 2. Summary of backward selection using AIC in regard to lifetime sexual offending (N=190).

	AIC
Start	339,73
<i>After removing predictor variable ...</i>	
Non-heterosexuality	337,20
Exclusivity	335,49
Offence-supportive attitudes	334,92

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