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Empathy in Pedophilia and Sexual Offending Against Children: A Multifaceted Approach

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Empathy is regarded as dynamic risk factor of child sexual offending. However, empathy research in the

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continued

context of child sexual abuse suffers from various problems. First, prior studies failed to differentiate between pedophilic and nonpedophilic sexual offenders. Second, there is no distinction made between cognitive and affective empathy. Third, cognitive and affective empathy toward emotional states of specific age groups (children and adults) has not been adequately addressed. The current study tackles these shortcomings investigating offending and nonoffending pedophiles and multiple aspects of empathy using self-reports and objective behavioral measures. Participants included 85 pedophilic men who committed hands-on child sexual offenses (P+CSO), 72 pedophilic men who never committed hands-on child sexual offenses (P−CSO), and 128 nonoffending teleiophilic male controls (TC). Several affective and cognitive aspects of empathy were assessed using the Multifaceted Empathy Test (MET) and the Interpersonal Reactivity Index (IRI). Whereas in self-reports (IRI) P+CSO scored lower than TC (P−CSO intermediate) in cognitive perspective-taking abilities, a performance-based measure (MET) revealed evidence for a better differentiation of emotional states in P−CSO as compared with P+CSO (TC intermediate). In addition, P+CSO and P−CSO showed significantly higher affective resonance while observing children (MET), which was paralleled by higher self-reported levels of personal distress in social situations (IRI). The results indicate evidence for higher general affective empathic resonance to children in pedophilic men but superior cognitive empathy abilities in nonoffending pedophiles only, which may act as a protective factor in the prevention of sexual offending. Together, these findings underline the importance of accounting for multiple facets of empathy when targeting pedophilia and child sexual offending.

General Scientific Summary

This study assessed cognitive empathy and affective empathy toward emotional states of children and adults in a sample distinguishing between pedophilia and child sexual abuse. Results showed higher affective empathic resonance to emotional states of children in pedophilic men but superior cognitive empathy abilities in nonoffending pedophiles only, which may act as a protective factor in the prevention of sexual offending.

Keywords: pedophilia, sexual offending against children, cognitive empathy, affective empathy, performance-based measures

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Pedophilia is characterized by recurrent sexual impulses, urges, and fantasies involving minors. In the International Statistical Classification System of Diseases and Related Health Problems (ICD-10; World Health Organization, 1992) the term *minors* include prepubertal and early pubertal children, the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; American Psychiatric Association, 2013) limits its definition to prepubertal children. Population-based studies suggest that the prevalence of pedophilic interest is 1% or 5% in men (Ahlers et al., 2011; Beier, Bosinski, & Loewit, 2005; Seto, Cantor, & Blanchard, 2006). Pedophilia is not to be equated with child sexual offenses (CSO). Even though, pedophilic interest is a major risk factor for committing sexual offenses against children (Hanson & Morton-Bourgon, 2005; Mann, Hanson, & Thornton, 2010; Seto et al., 2006), a pedophilic inclination does not automatically lead to offending behavior (Beier et al., 2009; Cantor & McPhail, 2016). The question on why some pedophiles refrain from CSO and others act on their sexual impulses is a hot topic of research. There is a particular focus on dynamic risk factors, as they are not only assumed to be associated with the likelihood of reoffending (Barbaree & Marshall, 1988; Neutze, Grundmann, Scherner, & Beier, 2012), but are also expected to be susceptible to treatment (Beier et al., 2009).

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One such proposed dynamic risk factor is empathy. Empathy describes the ability to understand and share another's emotional state (Blake & Gannon, 2008). Theorists as early as the 1980s have hypothesized that sexual child offenders lack cognitive and affective representations of their victim's emotional state (e.g., Finkelhor & Lewis, 1988). It has been proposed that a compromised ability to understand and attribute mental states to others facilitates sexual offending, while understanding the victim's distress and appreciating the consequences of an abuse inhibits sexual offenses. However, research findings on empathy in men who committed CSO are heterogeneous with some studies reporting reduced empathic abilities (Chaplin, Rice, & Harris, 1995; Elliott, Beech, Mandeville-Norden, & Hayes, 2009; Gery, Miljkovitch, Berthoz, & Soussignan, 2009) and others finding abilities comparable to the respective control group (e.g., community controls or nonsexual offending controls; Fernandez, Marshall, Lightbody, & O'Sullivan, 1999; Langevin, Wright, & Handy, 1988; Marshall, Hamilton, & Fernandez, 2001; Tierney & McCabe, 2001).

Despite mixed results, empathy is regarded as valid predictor of recidivism among sex offenders. Hence, empathy is not only a critical component of treatment programs in the (relapse) prevention of CSO (Marques, Wiederanders, Day, Nelson, & van Ommeren, 2005), but also a part of clinical and forensic instruments assessing changes in risk status (e.g., Stable, 2007, Hanson, Harris, Scott, & Helmus, 2005; Therapist Rating Scale, Marshall, Marshall, Serran, & Fernandez, 2013).

Mixed results might be attributable to following drawbacks that reduce interpretability of studies. First, prior studies on empathy failed to differentiate between pedophilic and nonpedophilic child sexual offenders. This differentiation may be especially important, as pedophilia has been proposed to show as a core feature heightened emotional congruence with children (cognitive and emotional affiliation with children; Konrad, Kuhle, Amelung, & Beier, 2018). Thus, depending on the operationalization of empathy with children (see below), pedophilic child sexual offenders might even show greater empathy with children than nonpedophilic controls (McPhail, Hermann, & Nunes, 2013). Second, there are various existing definitions of empathy, that range from other oriented social emotion (e.g., Batson et al., 1997) to anticipating and sharing other's affective states (e.g., Preston, 2007). Still, despite a number of closely related constructs (Walter, 2012), most authors agree that at least two basic types of empathy should be distinguished: (a) cognitive empathy, that is, the capacity to understand and infer emotional states, and (b) affective empathy, that is, the observer's emotional response to another person's emotional state (e.g., Dziobek et al., 2008). Third, empathic responses for specific age groups have not been systematically analyzed. As, next to the cognitive and affective aspect, empathy can be further broken down into empathy toward children and adults. Thus, an understanding of children's as well as adult's emotional experience and the ability of an emotional response toward children and adults. Considering empathy toward a specific age group, primarily child victim empathy and emotional congruence with children has been studied. Victim empathy implies a comprehension of the effect that the abuse has/had on (own) child victims and of the victim's emotional response to the abuse (Mann & Barnett, 2013). Indeed research has shown that child sexual offenders show compromised abilities to infer and represent the perspective of child victims of sexual abuse (Fernandez et al., 1999; Marshall, 1989; Marshall et al., 2001; Tierney & McCabe, 2001). However, victim empathy represents not only a restricted form of empathy for children, the construct validity of victim empathy is highly questionable. For example, Fernandez et al (1999) argued that respective findings rather reflect offense-supportive cognitive distortions (e.g., that sexual activities would stimulate children's development). Emotional congruence, in turn, is indeed related to empathy toward children, however, rather reflects emotional identification with the children's world or feeling closer to children than to adults (Konrad et al., 2018).

Accordingly, a differential analysis of cognitive and affective empathy both toward children and adults in a sample distinguishing between CSO and pedophilia is lacking. In this study, we therefore aimed at disentangling cognitive and affective empathizing with emotional states of children and adults. We compared three groups: (1) pedophilic men who had committed hands-on sexual offenses against children, (2) pedophilic men who had not committed hands-on sexual offenses against children, and (3) male teleiophilic (i.e., sexual preference toward adults) nonoffending control participants. Investigating empathy in the largest sample of men with pedophilia to date, we used not only self-reports, but also more objective behavioral measures. We additionally examined the relationship of empathy to potentially associated variables, such as demographic or cognitive characteristics of the sample, as depressive symptoms (e.g., biased processing of emotional stimuli) or cognitive deficits (e.g., biased memory or attention) have been found to be associated with CSO and pedophilia, as well (Kafka, 2012; Tenbergen et al., 2015). Because nonoffending pedophiles manage to control their sexual impulses, we expected to find empathic alterations restricted to those who had committed CSO. Given the abovementioned differentiations between cognitive and affective empathy as well as self-report and performance-based measures, we further aimed to characterize potential deficits more precisely.

Method

Participants

All participants were enrolled in the "NeMUP" (Neural Mechanisms Underlying Pedophilia and sexual offending against children) study. A total of 85 pedophilic men who have a history of hands-on child sexual offenses (P+CSO; *M* age = 39.41, *SD* = 9.64) and 72 pedophilic men without history of hands-on child sexual offenses (P−CSO; *M* age = 33.64, *SD* = 9.21) recruited via media advertisements, online forums, mailing lists, practitioners, and the prevention project "Dunkelfeld" (PPD; Beier et al., 2009) in five German cities (Berlin, Kiel, Magdeburg, Essen, and Hannover) were included. Child sexual offending referred to at least one by the participant self-reported incidence of any hands-on sexual offense against children under the age of 14 including sexually touching or penetrating a child or encouraging a child to touch or manipulate the offender's genitals or penetrate him. Self-reports of CSO were not confirmed with official file reviews, as pedophilic men were recruited form the Dunkelfeld. Although the consumption of child sexual exploitation material constitutes sexual "hands-off" offending, we focused our analyses on hands-on sexual contact with children. The association between hands-on offenses and empathy is of particular interest here, due to the direct social interaction between offender and victim with a

high emotional load. Additionally, reported studies refer to preserved empathic abilities in hands-on but not hands-off offenses (compare Finkelhor & Lewis, 1988). Recruitment of 128 male nonoffending teleiophilic control participants (TC; mean age = 33.28, *SD* = 9.78) was carried out via mailing lists and flyers. Subjects were excluded in case of uncertainties regarding their sexual orientation or sexual age preference, any present substance abuse, psychotic or severe mood disorders (Hamilton Depression Scale score of 15 or above), present intake of psychotropic medication (including androgen deprivation therapy), neurological disorders, age above 60, or an intelligence score below or above two standard deviations from the normalized average score. Written informed consent was given by all participants before participation. The study was approved by the local institutional review boards of all participating centers.

Assessment

DSM–IV–TR (American Psychiatric Association, 2000) axis I and II disorders were assessed using German versions of the Structured Clinical Interview for *DSM–IV* (Fydrich, Renneberg, Schmitz, & Wittchen, 1997; Wittchen, Zaudig, & Fydrich, 1997). To determine the participants' level of depressive symptoms, we additionally administered the Hamilton Rating Scale for Depression (HAM-D; Baumann, 1976). An intelligence score was obtained using four subtests (*Similarities, Vocabulary, Block Design, and Matrix Reasoning*) of the German version of the Wechsler Adult Intelligence Scale, 4th Edition (WAIS; Petermann, 2012). Assessment of pedophilic and other paraphilic sexual interest was based on criteria of the ICD-10 (World Health Organisation, 1992). Sexual orientation, sexual age preference, further paraphilic sexual interest, as well as consumption of child sexual exploitation material and hands-on child sexual offenses were explored by means of a semistructured clinical interview. The self-report on sexual orientation and sexual age preference was verified with (1) an adaptation of the Kinsey Scale (Kinsey, Pomeroy, & Martin, 1975), which was extended with the developmental stages (Tanner stages) of the desired sexual partners and (2) a viewing time paradigm (Imhoff et al., 2010), with unobtrusively measured the participants response latencies while they rated the sexual attractiveness of target stimuli. Higher response latencies for either the group of mature developmental age categories (Tanner Stages 4 and 5 of males and females) or the group of immature developmental age categories (Tanner Stages 1 through 3, males and females) were regarded as sexual interest in that group. All assessments were carried out by experienced clinicians or research associates under supervision of a senior researcher.

Empathy Tasks

Empathic functioning was addressed multidimensionally applying (1) the Multifaceted Empathy Test (MET; Dziobek et al., 2008), which is composed of objective performance-based measures and self-ratings, and (2) the self-report questionnaire Interpersonal Reactivity Index (IRI; Davis, 1983; German version: Paulus, 2006). Both measures allow separate assessment of cognitive (CE) and emotional empathy (EE). The IRI takes approximately 10 min and the MET 20–25 min to complete.

IRI. The IRI is a 28-item self-report questionnaire with four 7-item scales. In this study, the scale Perspective Taking (PT) is used for the representation of CE and the scales Emotional Concern (EC) and Personal Distress (PD) for the construct of EE. The PT scale measures the respondents' tendency to take the psychological point of view of others, the EC scale collects information concerning other-oriented feelings of sympathy and concern, and the PD scale assesses self-oriented feelings of anxiety and distress in tense interpersonal settings. The Fantasy scale is left out of the current study as it is rather associated with the level of emotionality (Paulus, 2006). Subjects selected on a five-point Likert scale the degree to which the items applied to them, with 0 indicating *does not describe me well* to 4 indicating *describes me very well* resulting in a possible range of 0 to 28 per subscale. We obtained good internal consistency indices with alpha coefficients of 0.71 for the PT scale, 0.69 for the EC scale, and 0.76 for the PD scale. These values are in accordance with data obtained by the authors of the questionnaire (Davis, 1983; Paulus, 2006).

MET. The MET consists of 80 photographs depicting children and adults in emotional states. The validated stimulus material was specially developed for this study with pictures systematically varying by age (adults vs. children), sex (male vs. female), and valence of emotion (positive vs. negative; Lemme, 2012). For the assessment of CE, participants inferred the mental state of the presented individuals by selecting one out of four provided descriptions of emotions. In the EE condition participants rated their level of empathic concern in response to the pictures by a Likert scale ranging from 0 (*not concerned*) to 9 (*highly concerned*). There was no time limit for the rating. Accuracy sum scores for CE and average rating scores for EE were calculated. Mean scores were additionally derived separately for children and adults. For each participant, we calculated an individual composite score by dividing response times (RTs) by number of items answered correctly in the CE condition. This composite measure is considered to represent a more sensitive measure of task performance, as it accounts for compensatory strategies such as speed–accuracy trade-offs (Sucksmith, Allison, Baron-Cohen, Chakrabarti, & Hoekstra, 2013). Cronbach's alphas for the eight CE items and eight EE items were good to highly satisfactory with alpha coefficients of 0.72 and 0.95, respectively. These alpha coefficients correspond well with values reported by the instrument's developers (Dziobek et al., 2008). Correlational analyses on convergent and divergent validity of the MET with the IRI supported the construct validity of the MET, showing stronger correlations between the MET's EE scale and the IRI's EC and PD scales and between the MET's CE scale and the PT scale of the IRI (Dziobek et al., 2008).

Statistical Analyses

Group differences in demographic variables and empathy measures were analyzed using IBM SPSS Statistics Version 22.0 (IBM Corp., Armonk, NY). Pearson's chi-square tests were employed to assess group differences in categorical variables. Group differences on the IRI were examined using multivariate analyses of variance (MANOVA) with IRI subscales (PT, EC, PD) as dependent variables and group (P+CSO, P−CSO, TC) as between-subjects variable. Accuracy scores in the CE condition of the MET, average ratings in the EE condition, and composite scores were analyzed in separate mixed analyses of variance (ANOVA) designs with age (children, adults) as within-subject factor and group as

between-subjects factor. Analyses of RTs were carried out using the same analyses. Cohen's *d* (Cohen, 1988) and partial eta-squared (Keppel, 1982) were calculated as measures of effect size.

To account for demographic differences between groups (i.e., age, intelligence; see Table 1), we repeated the analyses with (1) demographically matched subgroups and (2) an additional model containing the respective demographic variables as covariates. Despite group differences on HAM-D, scores were not included in the subgroup- or covariance analyses. Please refer to the discussion, section limitation for further explanation. Groups were matched with frequency distribution matching based on age, $F(2, 150) = 0.09$, $p = .91$, partial $\eta^2 = 0.00$, and intelligence (WAIS score: $F[2, 150] = 1.96$, $p = .14$, partial $\eta^2 = 0.03$). Within each matched subgroup, the sample size amounted to 51 participants. In case of differing results between the total sample and either the matched subgroups or the covariance analyses, differing findings are outlined in the results section. If not otherwise specified, results obtained within the total sample did not differ from results obtained with the matched subgroups or covariance analysis.

To further differentiate between P+CSO and P−CSO we conducted a hierarchical binary logistic regression analysis. The dichotomous variable CSO (yes/no) was included as outcome variable. Predictor variables were entered blockwise. Demographic variables were entered first followed by empathy and variables of general delinquency to investigate whether these explained variance over and above demographic characteristics. Within each block variables were entered with backward elimination procedure to avoid overfitting the model. All candidate variables were included into the initial model and sequentially eliminated by the variables with the least explanatory contribution (R^2). Selection of predictors was based on group differences as reported in Table 1. We additionally estimated moderation effects for the association between CE, EE and CSO using the PROCESS macro (Hayes, 2013). Conditional effects were generated utilizing 5000 bootstrap resamples for each analysis. The dichotomous variable CSO was included as outcome variable. CE scores and EE scores of the MET were used as predictor variables. Moderating effects of intelligence and age (see group differences and results of offender status prediction in Tables 1 and 2 for selection of variables) were tested in separate analyses. Variance inflation factor (VIF) and tolerance statistics were generated as collinearity statistics. VIF values >10 and tolerance scores <0.1 were regarded as critical values. With the lowest tolerance at 0.71 and the highest VIF at 1.42 collinearity statistics indicated absence of multicollinearity (see Table S4 in the online supplemental material).

Bonferroni correction was adopted for post hoc multiple comparison. Analyses were two-tailed, and the statistical level of significance was set at 0.05. Predictors and moderators were mean centered prior to each regression analysis.

Results

Demographic Variables

The study groups of the total sample differed significantly in age and intelligence. Furthermore, diagnostic criteria for Axis I (other than pedophilia) and Axis II disorders were significantly more often fulfilled in the two pedophilic groups (see Table 1).

IRI

The MANOVA revealed significant effects of group on the PT (partial $\eta^2 = 0.02$; Table 1) and PD scales (partial $\eta^2 = 0.10$). Post hoc analyses showed that P+CSO and P−CSO scored significantly higher on the PD scale, indicating higher levels of personal distress in tense social situations then TC (P−CSO > TC, $p < .001$, $d = 0.80$; P+CSO > TC, $p < .01$, $d = 0.46$; P+CSO/P−CSO, $p = .12$, $d = 0.33$; Figure 1). Moreover, P+CSO scored significantly lower in self-reported cognitive PT abilities compared with TC ($p < .05$, $d = 0.38$). Post hoc comparisons of P−CSO and TC ($p = .15$, $d = 0.19$) and of P−CSO and P+CSO ($p = .42$, $d = 0.13$) did not reach significance.

Unlike results of the total sample, group effects on the PT scale in both the matched analyses ($F = 0.84$, $p = .44$, partial $\eta^2 = 0.01$; see Table S1 in the online supplemental material) and covariation analyses ($F = 1.87$, $p = .16$, partial $\eta^2 = 0.014$; see Table S2 in the online supplemental material) did not reach significance. Moreover, when MANOVA was repeated with matched groups, solely P−CSO scored significantly higher on the PD scale compared with P+CSO ($p < .05$, $d = 0.52$) and TC ($p < .001$, $d = 0.84$). The comparison between P+CSO and TC was not significant ($p = .23$, $d = 0.38$).

MET

Cognitive empathy. Data analyses revealed a significant effect of condition on accuracy scores (partial $\eta^2 = 0.04$; Table 1) and RTs (partial $\eta^2 = 0.087$). Subjects had higher accuracy scores and shorter test taking times when they had to infer mental states of adults compared with mental states of children. Moreover, there was a significant main effect of group on both accuracy (partial $\eta^2 = 0.04$) and RTs (partial $\eta^2 = 0.07$). Post hoc tests of accuracy scores showed that this was due to a significant difference between P+CSO and P−CSO ($p = .001$, $d = 0.57$; see Figure 1). Specifically, P−CSO exhibited better performance in inferring mental states of others than P+CSO. Accuracy scores of TC were roughly positioned between the two pedophilic groups with nonsignificant differences between TC and P−CSO ($p = .32$, $d = 0.26$) and between TC and P+CSO ($p = .05$, $d = 0.31$). Though, there was a trend toward lower accuracy scores for P+CSO compared with TC. Post hoc analyses of RTs revealed that TC showed shorter response latencies than P+CSO ($p < .001$, $d = 0.60$) and P−CSO ($p < .01$, $d = 0.56$; see Figure 1). RTs of P+CSO and P−CSO did not differ significantly ($p = 1.00$, $d = 0.05$). The interaction terms of group x condition for accuracy (partial $\eta^2 = 0.00$) and RTs (partial $\eta^2 = 0.02$) did not reach significance.

Inclusion of demographic variables as covariates yielded significant effects of the covariates and reduced the within-group variance for the condition effect on both cognitive empathy accuracy ($F = 0.80$, $p = .37$, partial $\eta^2 = 0.00$; see Table S2 in the online supplemental material) and cognitive empathy RT ($F = 2.69$, $p = .10$, partial $\eta^2 = 0.10$). Furthermore, in the matched sample, the group effect on RTs did not remain significant, $F(2, 150) = 2.16$, $p = .12$, partial $\eta^2 = 0.03$, (see Table S1 in the online supplemental material).

Composite score of RT and cognitive empathy accuracy scores. Results from mixed ANOVAs showed a significant main effect of condition (partial $\eta^2 = 0.04$), suggesting better performance for pictures of adults compared with pictures of children

Table 1
Characteristics of Total Sample

Total sample	P+CSO (n = 85)	P−CSO (n = 72)	TC (n = 128)	Test statistics	Post-hoc comparisons
Sociodemographic characteristics					
Age, years, $M \pm SD$	39.41 ± 9.64	33.64 ± 9.21	33.28 ± 9.78	$F = 11.70^{***}$	P+CSO > P−CSO/TC
Sexual orientation (gynaphilic/androphilic/both), n	41/29/15	37/23/12	93/31/4	$\chi^2 = 21.12^{***}$	
In a relationship (yes/no), n	37/48	23/49	46/82	$\chi^2 = 2.40$	
Children (yes/no), n	35/50	13/59	28/100	$\chi^2 = 13.38^{**}$	
Employed (yes/no), n	70/15	50/22	87/41	$\chi^2 = 5.81$	
WAIS score, $M \pm SD$	95.72 ± 14.70	103.74 ± 13.66	103.91 ± 15.84	$F = 8.74^{***}$	P−CSO/TC > P+CSO
Clinical and Diagnostic characteristics					
Lifetime DSM-IV-TR diagnoses; Axis I (yes/no), n	55/28[a]	41/29[a]	32/95[b]	$\chi^2 = 40.33^{***}$	
Lifetime DSM-IV-TR diagnoses; Axis II (yes/no), n	35/48[a]	31/38[f,c]	6/121[b]	$\chi^2 = 54.26^{***}$	
HAM-D, $M \pm SD$	3.96 ± 4.81	5.08 ± 5.58	.99 ± 2.22	$F = 26.33^{***}$	P−CSO/P+CSO > TC
Offence variables					
Number of sexual offenses, median (range)	2 (1–17)				
Victim age, $M \pm SD$	9.74 ± 2.80				
Ever convicted (yes/no), n	57/28				
Offenders of child sexual exploitation material (yes/no), n	55/30	52/20		$\chi^2 = 7.77$	
Number of nonsexual offenses, median (range)	0 (0–14)	0 (0–10)	0 (0–40)	$\chi^2 = 22.50^{d***}$	P+CSO > P−CSO/TC
Empathic functioning					
IRI, $M \pm SD$					
Perspective taking	13.77 ± 2.66	14.15 ± 3.21	14.75 ± 2.52	$F = 3.14^{*}$	TC > P+CSO
Personal distress	10.92 ± 3.21	12.01 ± 3.47	9.52 ± 2.97	$F = 14.16^{***}$	P+CSO/P−CSO > TC
Empathic concern	14.29 ± 2.87	13.87 ± 3.48	13.77 ± 2.42	$F = .81$	
MET, $M \pm SD$					
Cognitive empathy accuracy					
Children	6.80 ± 1.17	7.37 ± .93	7.10 ± 1.10	Group: $F = 6.52^{**}$ Condition: $F = 12.15^{**}$ Group × Condition: $F = .31$ P−CSO > P+CSO	
Adults	7.05 ± 1.12	7.51 ± .86	7.35 ± .99		
Total	6.92 ± 1.02	7.44 ± .75	7.22 ± .91		
Emotional empathy rating					
Children	5.55 ± 1.48	5.65 ± 1.35	4.88 ± 1.34	Group: $F = 3.52^{*}$ Condition: $F = 106.86^{***}$ Group × Condition: $F = 23.92^{***}$	
Adults	4.94 ± 1.63	4.99 ± 1.42	4.82 ± 1.42		
Total	5.25 ± 1.48	5.32 ± 1.34	4.85 ± 1.29		
Cognitive empathy response times (in s)					
Children	7.65 ± 2.84	7.55 ± 2.71	6.20 ± 1.79	Group: $F = 10.48^{***}$ Condition: $F = 26.82^{***}$ Group × Condition: $F = 2.85$ P−CSO/P+CSO > TC	
Adults	7.19 ± 2.59	7.03 ± 2.67	6.05 ± 1.87		
Total	7.42 ± 2.66	7.29 ± 2.61	6.12 ± 1.74		
Emotional empathy response times (in s)					
Children	3.93 ± 1.51	4.23 ± 1.70	3.45 ± 1.10	Group: $F = 6.55^{**}$ Condition: $F = 28.10^{***}$ Group × Condition: $F = 2.71$ P−CSO > TC	
Adults	3.67 ± 1.45	3.98 ± 1.64	3.36 ± 1.09		
Total	3.80 ± 1.44	4.10 ± 1.64	3.40 ± 1.06		
Composite score[e]					
Children	1.15 ± .43	1.04 ± .40	.89 ± .29	Group: $F = 9.29^{***}$ Condition: $F = 11.23^{**}$ Group × Condition: $F = .32$ p + CSO > TC	
Adults	1.07 ± .66	.96 ± .46	.85 ± .35		
Total	1.10 ± .48	.99 ± .40	.86 ± .29		

Note. Post-hoc comparisons: > = significant group difference; / = no group difference; P+CSO = pedophilic men with child sexual offenses; P−CSO = nonoffending pedophilic men; TC = nonoffending teleiophilic controls; WAIS = Wechsler Adult Intelligence Scale; HAM-D = Hamilton Rating Scale for Depression; IRI = Interpersonal Reactivity Index; MET = Multifaceted Empathy Test.

[a] Data missing from two participants. [b] Data missing from one participant. [c] Data missing from three participants. [d] Kruskall-Wallis-Test. [e] Composite score calculated by dividing response times by number of items answered correctly in the cognitive empathy condition.

$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Table 2
Binary Logistic Regression Analysis for Prediction of Offender Status Among Pedophiles

Included	*B* (*SE*)	*OR* [95% CI]
Block 1: Sociodemographic variables		
Age	.07** (.03)	1.07 [1.02; 1.13]
WAIS	−.03* (.02)	.97 [.94; 1.00]
Having children[c]	−.94 (.53)	.39 [.14; 1.10]
Block 2: Empathy variables		
Personal distress[a]	−.09 (.06)	.91 [.80; 1.03]
Perspective taking[a]	−.03 (.08)	.98 [.83; 1.14]
Empathic concern[a]	.05 (.08)	1.05 [.91; 1.22]
Cognitive empathy accuracy[b]	−.49* (.20)	.61 [.42; .90]
Emotional empathy rating[b]	−.01 (.16)	.99 [.73; 1.45]
Block 3: General delinquency		
Number of nonsexual offenses	.13 (.15)	1.14 [.85; 1.52]
Offences of child sexual exploitation material[c]	−.20 (.47)	.82 [.33; 2.04]

Note. $R^2 = .34$ (Nagelkerke), .25 (Cox & Snell); Model $\chi^2(10) = 39.73$, $p < .001$. *B* = regression coefficient; *OR* = odds ratio; CI = confidence interval; WAIS = Wechsler Adult Intelligence Scale.
[a] Interpersonal Reactivity Index. [b] Multifaceted Empathy Test. [c] 0 = no, 1 = yes.
* $p < .05$. ** $p < .01$.

and a significant group effect (partial $\eta^2 = 0.06$). Post hoc analyses revealed that TC showed significantly lower scores compared with P+CSO ($p < .001$, $d = 0.62$), which indicates a general improved performance for TC over P+CSO. There was no significant difference between TC and P - CSO ($p = .09$, $d = 0.39$) and between P+CSO and P−CSO ($p = .27$, $d = 0.23$). There was no significant interaction between group and condition (partial $\eta^2 = 0.00$).

In the matched sample, neither the group effect ($F = 2.07$, $p = .13$, partial $\eta^2 = 0.03$) nor the condition effect ($F = 2.60$, $p = .11$, partial $\eta^2 = 0.02$) reached significance. In the covariation analyses, the condition effect is nonsignificant either ($F = 0.19$, $p = .67$, partial $\eta^2 = 0.00$).

Emotional empathy. The mixed ANOVA of the EE rating showed significant condition (partial $\eta^2 = 0.28$), group (partial $\eta^2 = 0.02$), and Group × Condition interaction effects (partial $\eta^2 = 0.15$). This indicates that the level of reported EE for children and for adults differed between the study groups. Specifically, groups differed significantly on their EE rating for children ($F = 9.51$, $p < .001$, partial $\eta^2 = 0.06$; see Figure 1). Compared with TC both P−CSO ($p = .01$, $d = 0.58$) and P+CSO ($p < .01$, $d = 0.49$) reported higher levels of EE for children. There was no group difference between P+CSO and P−CSO ($p = 1.00$, $d = 0.06$). Between-groups effects for the scale assessing EE for adults did not reach significance ($F = 0.35$, $p = .70$, partial $\eta^2 = 0.00$). For RTs we found a significant effect of condition (partial $\eta^2 = 0.09$), indicating longer RTs when being presented with pictures of children compared with pictures of adults. Furthermore, there was a significant effect of group (partial $\eta^2 = 0.04$). Post hoc tests revealed that TC had significantly shorter response latencies compared with P−CSO ($p < .01$, $d = 0.54$; see Figure 1). Comparisons between TC and P+CSO ($p = .11$, $d = 0.32$) and P+CSO and P−CSO ($p = .49$, $d = 0.20$) did not reach significance. The interaction effect was not significant (partial $\eta^2 = 0.02$).

The group effect in the matched sample did not remain significant ($F = 1.07$, $p = .35$, partial $\eta^2 = 0.01$), yet significant group differences were also found on the scale assessing EE for children ($F = 3.32$, $p < .05$, partial $\eta^2 = 0.04$) with a trend toward higher levels for both P+CSO ($p = .08$, $d = 0.43$) and P−CSO ($p = .08$, $d = 0.46$) compared with TC. Due to significant covariation, the condition effect in the total sample with demographic correction did not reach significance ($F = 0.15$, $p = .70$, partial $\eta^2 = 0.00$).

Prediction of Offender Status in Pedophiles

Logistic regression analysis revealed that over and above demographic and empathy variables, variables of general delinquency did not predict CSO among pedophiles (see Table 2). CSO was predicted by age (risk increased with higher age), intelligence (risk increased with lower intelligence) and CE as measured by the MET (risk increased with lower empathy). The predictive effect of empathy on CSO was not moderated by age or intelligence (see Table 3).

Discussion

Summary

This study is the first to thoroughly differentiate between effects of pedophilia and CSO on empathy in the as of yet largest sample of this population. We employed a multifaceted approach, exploring both cognitive empathy (CE) and emotional empathy (EE) for emotional states of children and adults administering self-report and performance-based measures. Our main findings were (1) CE was compromised in pedophilic men who committed CSO, only. Moreover, there was evidence that P−CSO had superior CE capabilities (or appreciated mental states of others more conscientiously, see below). (2) Compared with controls, both pedophilic groups reported higher levels of EE for children. (3) Empathy differences were not moderated by sociocognitive variables or intelligence.

P+CSO rated their abilities to understand the mental states of others as being lower than controls (IRI; Paulus, 2006) and, concordantly, scored the lowest in a performance-based measure on the ability to understand other's affective states (MET; Dziobek et al., 2008). The latter effect was more pronounced comparing

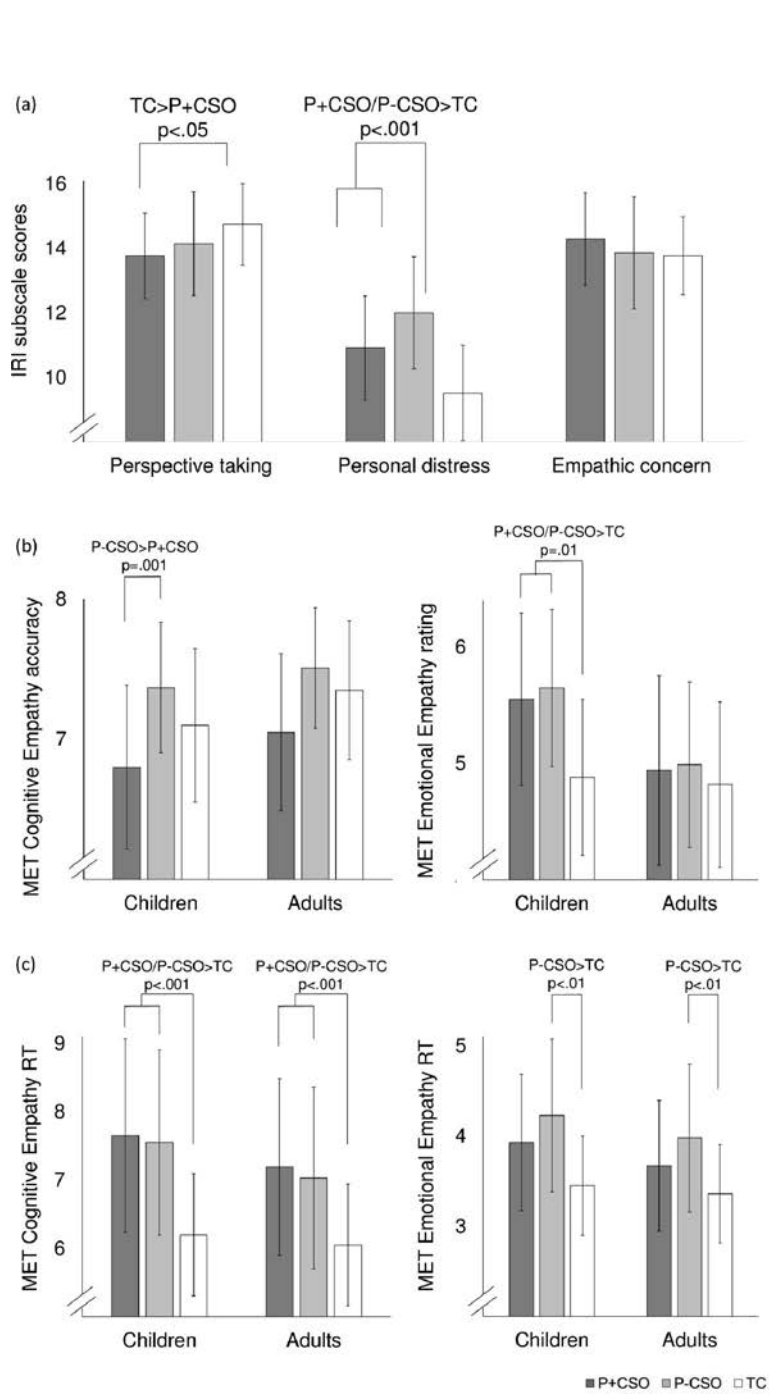

Figure 1. Level of reported cognitive and affective empathy. Bars indicating mean values per subsample for (a) the subscales Perspective Taking, Personal Distress, and Empathic Concern of the Interpersonal Reactivity Index, (b) Cognitive Empathy accuracy and Emotional Empathy rating of the Multifaceted Empathy Test, and (c) response times for Cognitive Empathy and Emotional Empathy of the Multifaceted Empathy Test. Error bars indicate 95% confidence intervals; > = significant group difference; / = no group difference; two-sided significance values. P+CSO = pedophilic men with child sexual offenses; P−CSO = nonoffending pedophilic men; TC = nonoffending teleiophilic controls.

Table 3
Moderated Binary Logistic Regression Analyses for Variables Differentiating Between Offending and Nonoffending Pedophiles

Included	*B* (*SE*)	*OR* [95% CI]
Model 1: Assessing moderating effects of intelligence		
Cognitive empathy accuracy[a]	−.44* (.22)	.64 [.42; 1.00]
WAIS	−.03* (.01)	.97 [.94; 1.00]
Cognitive Empathy × WAIS	.03 (.02)	1.03 [1.00; 1.06]
Model 2: Assessing moderating effects of age		
Cognitive empathy accuracy[a]	−.81*** (.22)	.44 [.29; .69]
Age	.08*** (.02)	1.08 [1.04; 1.13]
Cognitive Empathy × Age	.01 (.02)	1.01 [.97; 1.05]
Model 3: Assessing moderating effects of intelligence		
Emotional empathy rating[a]	.02 (.12)	.88 [.18; 4.43]
WAIS	−.04* (.01)	.95 [.87; 1.05]
Emotional Empathy × WAIS	.00 (.00)	1.00 [.99; 1.02]
Model 4: Assessing moderating effects of intelligence		
Emotional empathy rating[a]	−.08 (.12)	.97 [.39; 2.43]
Age	.07*** (.02)	1.08 [.94; 1.23]
Emotional Empathy × Age	.0 (.01)	1.00 [.98; 1.02]

Note. Model 1: R^2 = .16 (Nagelkerke), .12 (Cox & Snell); Model $\chi^2(2) = 19.80$, $p < .001$; Model 2: R^2 = .24 (Nagelkerke), .18 (Cox & Snell); Model $\chi^2(2) = 31.39$, $p < .001$; Model 3: R^2 = .10 (Nagelkerke), .07 (Cox & Snell); Model $\chi^2(2) = 11.80$, $p < .05$; Model 4: R^2 = .12 (Nagelkerke), .09 (Cox & Snell); Model $\chi^2(2)$ = 14.41. *B* = regression coefficient; *OR* = odds ratio; CI = confidence interval; WAIS = Wechsler Adult Intelligence Scale.
[a] Measured by the Multifaceted Empathy Test.
* $p < .05$. *** $p < .001$.

P+CSO to P−CSO (the difference having a medium effect size) than P+CSO to TC (small effect size). P−CSO exhibited the best CE performance, followed by TC and P+CSO. Since compromised abilities were detectable in P+CSO only, our results suggest that a reduced capability to understand and infer a victim's suffering may promote CSO in pedophilia. Or differently expressed, the capability to infer another's emotional state may be a protective factor against CSO. This is indeed consistent with the notion of treating empathy as risk factor of CSO (Blake & Gannon, 2008), however not empathizing in general, but the capability to infer another's emotional state (CE) irrespective of the counterparts age seems to be associated with CSO. Hence, empathy training in the prevention of CSO seems of great importance when targeting the ability to recognize, understand and infer mental states of others.

In contrast, increased EE was observable in both pedophilic groups. Data obtained with the MET suggested that this effect may be specific to resonating with affective states of children as P+CSO and P−CSO judged their EE response as being greater than TC when observing emotions displayed by children. Observing adults in varying emotional states did not result in differing EE in the studied groups. Since these findings were based on self-ratings, it is possible that these can be traced back to a social desirability response bias. Alternatively, this group difference may be explained by a higher capability to respond to another's emotional state if the counterpart meets the own sexual interest. However, if this interpretation was true, one would expect TC to resonate stronger with adults than P+CSO/P−CSO, which was not the case. Otherwise, this group difference is in line with research on emotional congruence, which showed that resonating with children might not be a risk factor in pedophilic men but a feature of their sexual interest in children (Konrad et al., 2018). Across all conditions assessed by the MET TC responded the fastest. In the CE condition RTs were significantly lower in TC than in both pedophilic groups. Because this raised the possibility that the increased CE in P−CSO may be attributable to a more conscientious processing, we repeated the analysis with a composite score weighting RTs by accuracy of CE responses. This showed that TC had the smallest speed-accuracy-trade off, while (evaluated in relation to the other study groups) performance indices of P−CSO dropped compared with evaluating accuracy alone. However, there was still no significant difference between TC and P−CSO, but P+CSO performed significantly worse than TC. This again indicates that there is no general CE deficit in pedophilia, but that deficient performance is associated with CSO. Furthermore, our results suggest that P−CSO performed the task more thoroughly and that the greater accuracy of this group comes at the expense of speed. It would be interesting to explore whether P+CSO (and TC) could reach the same level of CE accuracy when instructed to perform the task more conscientiously. P−CSO also exhibited the highest test taking times in the EE condition, again suggesting more thorough processing. Here, P+CSO had RTs intermediate between P−CSO and TC that did not differ from either group.

P+CSO were significantly older and exhibited lower intelligence scores than the two other groups. However, our main effects were not fully explained by these variables. This is evidenced by the facts that (a) repetition of analyses with (1) matched subgroups for age and IQ and (2) including age and IQ as covariates revealed better CE abilities in P−CSO compared with P+CSO and increased EE for children for both pedophilic groups compared with TC, (b) CE abilities were an independent predictor of group status, (d) these were not moderated by the effects of age or intelligence. Despite that, there seems to be a link between demographic variables and empathy measures, affirmed by significant correlations

between variables (see Table S3 in the online supplemental material).

Of note, regardless of the group effects, accurately inferring affective states of children was harder for the participants than understanding emotions of adults. In line with this, RTs were consistently elevated when children's emotions had to be evaluated. Independent of group membership this suggests that it is easier to take the perspective of and to affectively resonate with someone who is similarly aged as oneself. Alternatively, as longer RTs for children compared with adults were particularly found in the group of pedophilic men, it can be speculated whether pedophiles were more interested in pictures of children, which might have been accompanied by longer test taking times.

Limitations

Several limitations need to be addressed to avoid overinterpreting the findings. First, pedophilic men were mostly recruited via the German-wide PPD network. Generalizability of the results may therefore be limited as the PPD sample constitutes solely undetected, self-identified, and help-seeking men. Second, we were not able to verify whether all men truthfully admitted any sexual contact with a child. As all participants have been informed about medical/therapeutic confidentiality of all research associates, as well as the German judicial settlement concerning past offense that are exempt from declaration, no major confound is expected. Third, therapy effects might have influenced empathic abilities. The majority of pedophilic men were recruited from the PPD and training in empathic abilities is part of the therapeutic program (see BEDIT, 2013), which already led to differences in empathic functioning in pedophilic men after 1-year-treatment program (Beier et al., 2015). Though, a systematic bias seems unlikely as participants were recruited at varying times in the course of their therapy. Fourth, both pedophilic groups showed more depressive symptoms and more often fulfilled diagnostic criteria for axis I and axis II disorders. However, we did not adjust for HAM-D group differences because we did not expect a limiting effect, as (1) cognitive empathy accuracy scores differ between pedophilic groups only, and (2) we detected no associations between accuracy scores and rating scores of the MET (see Table S3 in the online supplemental material). Bivariate correlations with IRI subscales indicated a positive association with the HAM-D and personal distress only. This is in line with recent research showing higher scores on the personal distress scale of the IRI for people with depressive symptoms compared with healthy controls (e.g., Schreiter, Pijnenborg, & Aan Het Rot, 2013; Thoma et al., 2011). Fifth, results of the logistic regression analysis are somewhat limited due to the sample size and number of predictors. Based on the work of (Peduzzi, Concato, Kemper, Holford, & Feinstein, 1996), a sample size of 217 cases would be suggested. Therefore, the reported odds ratio might be slightly overestimated. Sixth, no measure of socially desirable responding was included. We can therefore not exclude that participants answered the self-report questionnaire in a socially desired manner. Finally, our study was cross-sectional. We cannot infer causality from our results, that is, it cannot be safely concluded that it is an a priori CE deficit in P+CSO that facilitates CSO. Compromised CE could for example, be a consequence of cognitive distortions personally justifying CSO. The mechanisms proposed in this article warrant confirmation from prospective designs.

Outlook

Future studies should elucidate whether compromised CE abilities in P+CSO are related to the whole range of emotional states or are rather associated with specific emotional representations linked to sexual offenses (e.g., fear, surprise, shame etc.). Moreover, it is important to find out what factors are driving restricted CE abilities in P+CSO (e.g., biographic, social, personality, psychopathological, or forensic variables not investigated in the current study). Additionally, the relationship between CE and intelligence should be examined more carefully. Furthermore, recent data revealed an association between executive dysfunctions and CSO (Kärgel et al., 2017). Likewise, deficient executive functioning has been linked to impairments in CE (e.g., Singer & Lamm, 2009). Subsequently, the question arises whether executive functioning can be regarded as underlying variable that increases the probability of CSO in pedophilia. However, in other psychiatric conditions such as schizophrenia, research has shown that CE cannot be fully explained by executive functions (Mehta et al., 2013). Nonetheless, this warrants confirmation in the studied population. In light of heightened EE for children in pedophilic men, future research should explore what kind of affective resonance is elicited. Is it an experience of distress (as indicated by the IRI)? Is it compassion? Is it an isomorphic affective state as seen in the child? The precise knowledge may hold the potential for fruitful preventive interventions.

Conclusion

Taken together, the results reveal that compromised cognitive empathy is not attributable to pedophilia per se, but that empathic abilities are diminished in the pedophilic offender group only. Pedophilic nonoffenders even showed greater cognitive empathy accuracy that, although it may result from more conscientious processing, could act as protective factor against child sexual abuse. Furthermore, pedophilic men displayed higher affective empathic resonance with children. These findings highlight the importance of accounting for offending behavior in pedophilic men and the assessment of multiple facets of empathy. Though their prospective relevance in the prevention of sexual child abuse remains to be shown, our results suggest therapeutic potential of interventions targeting empathy in men with pedophilia.

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