Are Child Abusers Sexually Attracted to Submissiveness? Assessment of Sex-Related Cognition With the Implicit Association Test

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Abstract

Child sexual abuse is associated with social anxiety, low self-esteem, and intimacy deficits. This, in combination with the core belief of a dangerous world, might suggest that child abusers are sexually attracted to submissiveness. The Implicit Association Test (IAT) was used to examine this hypothesis. Results indicated that child abusers have a stronger sexual preference for submissiveness than rapists, although there were no differences between child abusers and non-sexual offenders. Multinomial logistic regression analysis revealed that submissive–sexy associations have incremental value over child–sex associations in differentiating child abusers from other offenders. The predictive value of both implicit associations was explored by correlating IAT scores with measures for recidivism risk, aggression, and interpersonal anxiety. Child abusers with stronger child–sex associations reported higher levels of interpersonal anxiety and hostility. More research on implicit cognition in sex offenders is required for a better understanding of what these and similar implicit measures are exactly measuring and what role implicit cognition may play in sexual offending.

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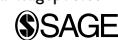
Introduction

Child sexual abuse is a widespread international problem (Finkelhor, 1994; Pereda, Guilera, Forns, & Gómez-Benito, 2009) and is related to various mental health problems for a large number of its victims (Beitchman et al., 1992; Paolucci, Genuis, & Violato, 2001). Sexual interest in children is posited to play a key role in the onset and persistence of child sexual abuse (Finkelhor & Araji, 1986; Hall & Hirschman, 1992; Seto, 2008; Ward & Beech, 2006). Meta-analytic research consistently shows that a deviant sexual interest in children is one of the best predictors of sexual recidivism among child abusers (Hanson & Bussière, 1998; Hanson & Morton-Bourgon, 2005). Consequently, accurate assessment of sexual interest is paramount in the (risk) assessment of child abusers.

The sexual interest of child abusers has typically been studied using self-report and physiological measures. Both self-report questionnaires and the commonly used penile plethysmograph (PPG) are significantly associated with sexual offending against children (e.g., Babchishin, Nunes, & Kessous, 2013; Banse, Schmidt, & Clarbour, 2010; Hanson & Morton-Bourgon, 2004, 2005; Harris, Rice, Quinsey, & Chaplin, 1996). Nevertheless, self-reports and PPG have a number of limitations. For example, PPG assessment requires specialized expertise and equipment, and cannot be used with everyone (Kalmus & Beech, 2005). PPG is also not used in many locations outside of North America (McGrath, Cumming, Burchard, Zeoli, & Ellerby, 2010). The validity of self-report questionnaires has been debated (e.g., Andrews & Bonta, 2003; Beech, 1998; Horley, 2000; Marshall, Anderson, & Fernandez, 1999; Ward, Hudson, Johnston, & Marshall, 1997), in particular because of concerns about social desirability and deliberate faking (Gannon, Ward, & Collie, 2007, but also, see Kroner, Mills, & Morgan, 2007; Mathie & Wakeling, 2011; Mills & Kroner, 2005). This concern is especially salient in forensic settings, where disclosure of certain sexual interests has important legal implications (Kalmus & Beech, 2005). The application of implicit measures might obviate some of the concerns raised with regard to the use of self-report questionnaires measuring sexual interest (Ward et al., 1997), and, more importantly, may provide complementary information to self-report and physiological measures (e.g., Babchishin, Nunes, & Kessous, 2013).

There is considerable evidence that implicit measures, such as the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998), may be useful for assessing sexual interest and provide complementary information to self-report measures (e.g., Banse et al., 2010). The IAT has good predictive validity in various domains of psychopathology (Roefs et al., 2011) and is relatively resistant to deliberate faking (Cvencek, Greenwald, Brown, Gray, & Snowden, 2010; Steffens, 2004). Moreover, previous studies have successfully demonstrated the ability of the IAT to accurately characterize the sexual interest of child abusers; results indicate that child abusers more strongly associate "children" and "sex" (or "sexual" or "sexy") than do

other types of offenders (Gray, Brown, MacCulloch, Smith, & Snowden, 2005; Hempel, Buck, Goethals, & van Marle, 2013; Nunes, Firestone, & Baldwin, 2007; Steffens, Yundina, & Panning, 2008). Brown, Gray, and Snowden (2009) even showed that child–sex associations can be used to reliably distinguish pedophilic offenders (who victimize children <12 years of age) from hebephilic offenders (who victimize youths aged 12-15 years). These researchers also found indications that child–sex associations can indicate the sexual interest of child abusers who deny their offenses. In a recent meta-analytic review of these and other studies (Babchishin, Nunes, & Hermann, 2013), IAT measures of associations between "children" and "sex" (or "sexual" or "sexy") were able to differentiate child abusers from rapists, non-sexual offenders, and non-offenders. Some studies even found that associations between "children" and "sexy" are correlated with a higher risk of recidivism, but the pattern across studies is inconsistent (Babchishin, Nunes, & Hermann, 2013; Nunes et al., 2007).

In addition to a sexual interest in children, social anxiety, low self-esteem, and intimacy deficits have been proposed as relevant risk factors in the etiology of child sexual abuse (Marshall, 1996; Ward, Keenan, & Hudson, 2000). Furthermore, it has been suggested that child abusers tend to believe that the world is a dangerous place (Ward & Keenan, 1999). As a result, child abusers may try to achieve dominance and control over others or they will seek security in children because children are considered to be more reliable, accepting, and able to be trusted. When combining these results, one could hypothesize that child abusers are not only sexually attracted to the physical appearance of children, but also to their submissive nature. Howells (1979) found indications that hospitalized child abusers are more likely to view interpersonal relations in terms of dominance and submission than a prison control group, but it remains unclear whether child abusers become sexually aroused by this inequality. A study by Kamphuis, de Ruiter, Janssen, and Spiering (2005) may have addressed an equivalent theme. Kamphuis and colleagues used a lexical decision task to explore implicit associations between "power" words and "sex" words. It was found that child abusers were relatively faster to respond to "power" words when preceded by subliminally presented "sex" words as compared with non-sexual violent offenders and university students. Thus, these results suggest that child abusers more strongly associated "sex" with "power" than did the comparison groups.

The current study was conducted to examine whether child abusers are sexually attracted to submissiveness. It was hypothesized that child abusers would associate "submissive" relatively more strongly with "sexy" (and "dominant" with "not sexy") than other offender samples. In addition, a multinomial logistic regression analysis was conducted to determine whether submissive–sexy associations have incremental value over the already well-established child–sex associations in differentiating child abusers from rapists and non-sexual offenders. Finally, the potential contribution of submissive–sexy and child–sex associations in the (risk) assessment of child abusers was explored by correlating these associations with measures of sexual recidivism risk and other relevant factors associated with sexually deviant behavior, such as interpersonal anxiety and social skills (Hoyer, Kunst, & Schmidt, 2001; Segal & Marshall,

1985) and general violence/antisocial behavior (Hanson & Morton-Bourgon, 2009; Ward, Hudson, & Marshall, 1996), including aggression, hostility, and trait anger. It was hypothesized that stronger submissive–sexy and child–sex associations would be significantly related to higher recidivism risk, interpersonal anxiety, and lower levels of general violent behavior. Since a sexual preference for submissiveness is potentially relevant in the etiology of rape, we also examined the predictive value of submissive–sexy associations within the rapist sample. We expected correlations between submissive–sexy associations and sexual recidivism risk and the measures of general violence.

Method

Participants

The study was conducted among 123 forensic psychiatric inpatients. In the Netherlands, patients are detained by hospital order, when the court has established a relation between a psychiatric disorder on one hand and an offense on the other hand (e.g., van Marle, 2000, 2002). These patients have committed an offense for which a maximum imprisonment of four or more years applies, such as child abuse, rape, manslaughter, or murder. Rulings are based on the evaluations of a psychiatrist and/or psychologist at a special assessment center of the Ministry of Justice.

Initially, patients who were admitted in FPC de Kijvelanden were approached to participate. Later, sex offenders from other Dutch forensic psychiatric hospitals (FPC 2Landen, FPC Oldenkotte, and FPC Veldzicht) were approached to participate. Of the 123 patients in the final sample, 28 were convicted child abusers (M age = 45.25 years, SD = 10.25, range = 26-64 years), 36 were rapists (M age = 39.83 years, SD = 9.60, range = 22-59 years), and 59 were non-sexual offenders (M age = 35.44 years, SD = 7.73, range = 24-56 years).

As a first step, a one-way ANOVA was conducted to test whether the offender groups differed in terms of age. Age indeed differed significantly across the three offender groups, $F(2, 120) = 11.75$, $p < .001$, with post hoc comparisons indicating that child abusers were significantly older than non-sexual offenders, with no differences between the other offender groups. Since latency measures suffer from age-related slowing (e.g., Faust, Balota, Spieler, & Ferraro, 1999; Ratcliff, Spieler, & McKoon, 2000), it was decided to include age as a covariate in all further analyses.

IAT

The IAT is a reaction time-based categorization task that assesses the strength of associations between concepts in memory. During this computer task, a number of stimuli are presented in succession. The patient's assignment is to sort the presented stimuli as quickly as possible to the correct category by pressing the left or right button on a response box. Category names are placed on the upper left and right corners

of the computer screen, corresponding to the correct response button for that category. Each trial commences with the presentation of a fixation cross that is replaced after 500 ms by a stimulus (either a picture or a word), which remains on the screen until the participant responds. Following an incorrect response, a red X appears below the stimulus, after which the participant has to press the correct button to continue to the next trial.

Three IAT measures were used for the current experiment: (a) a standard valence IAT, (b) a submissive–sexy IAT, and (c) a child–sex IAT. The submissive–sexy IAT was developed for the purpose of this study by using Dutch translations of dominant/submissive stimulus words as suggested by Haines (1999) and Rudman, Greenwald, and McGhee (2001) and sexy/not sexy stimulus words from Babchishin, Nunes, and Kessous (2013). The standard valence IAT and child–sex IAT were Dutch translations of the IAT measures administered in the Brown et al. (2009) study. A list of the original pictures and words used for the IAT measures can be found in Appendices A, B and C.[1]

A pilot study was conducted among a subsample of participants in the main study to ensure the correct interpretation of the submissive–sexy associations: as a personal characteristic (e.g., "I am sexually attractive because *I am submissive*") or as a characteristic of other individuals (e.g., "I feel sexually attracted *toward submissive people*"). Participants had to explain the extent to which they believe the concept pairs submissive–sexy/not sexy and dominant–sexy/not sexy belong together. Thirty of the 43 (69.8%) participants conceived the concepts as characteristics of other individuals, 5 (11.6%) as a personal characteristic, and the answers of 8 (18.6%) participants were undecided. This suggests that the submissive–sexy associations in this study can be interpreted as a sexual interest in submissiveness in partners or victims rather than in one's own submissiveness.

IAT Procedure

The IAT procedure used in this study was identical to the procedure as described by Greenwald, Nosek, and Banaji (2003). Blocks 1 and 2 were practice blocks to familiarize participants with the procedure and stimuli. Blocks 3 and 4 consisted of the *congruent* condition during which the left button was the correct response for the concept pairs submissive–not sexy, child–not sex, and flower–pleasant, and the right button was the correct response for the concept pairs dominant–sexy, adult–sex, and insect–unpleasant. Block 5 was again a practice block. In Blocks 6 and 7, the *incongruent* condition[2] was presented during which the left button was correct for the concept pairs dominant–not sexy, child–sex, and insect–pleasant, and the right button was correct for the concept pairs submissive–sexy, adult–not sex, and flower–unpleasant. In Blocks 1, 2, 3, 5, and 6, each stimulus was presented once in a random order. Blocks 4 and 7 were test blocks in which each stimulus was presented twice in a pseudo-random order, such that all stimuli were presented once before any were repeated.

Apparatus

All three versions of the IAT were administered on an Apple MacBook Pro 17-inch 2.53-GHz LED-backlit widescreen notebook and were controlled by E-Prime 2.0 software. Responses were collected by means of an E-Prime PST Serial Response Box.

Data Reduction

Latencies and errors were registered for each trial. Data were analyzed using the scoring algorithm developed by Greenwald et al. (2003). Errors were replaced with the mean latency for that block plus a 600 ms penalty. In accordance with the scoring algorithm, trials with latencies above 10,000 ms were eliminated. Participants for whom more than 10% of trials had latencies below 300 ms or with a total error rate above 25% were excluded from the corresponding IAT analysis.

IAT effects (*D* scores) and error rates comprised both practice and test blocks (Blocks 3, 4, 6, and 7). The *D* scores were calculated by expressing the difference between the mean latency of the congruent condition and the incongruent condition in terms of the pooled latency variance. *D* scores were calculated in such a manner that scores greater than zero indicated stronger submissive–sexy, child–sex, and flower–unpleasant associations, whereas *D* scores less than zero were an indication for stronger dominant–sexy, adult–sex, and flower–pleasant associations.

External Variables

The Sexual Violence Risk–20 (SVR-20; Boer, Hart, Kropp, & Webster, 1997; Dutch version: Hildebrand, de Ruiter, & van Beek, 2001) assesses the risk of sexual violence in sex offenders. The SVR-20 comprises 20 items in three sections, namely, Psychosocial Adjustment, History of Sexual Offenses, and Future Plans, that have to be rated on a 3-point Likert-type scale (0 = *does not apply*, 1 = *probably or partially applies*, and 2 = *applies*). Although scores on all items can be summed to one total score that reflects a "mechanical" measure of risk for sexual violence, the authors instruct evaluators to use clinical judgment in assigning offenders to risk categories, technically making the SVR-20 a structured professional judgment measure (Hanson & Morton-Bourgon, 2009). In this study, the structured professional judgment categories were not analyzed because the high-risk category comprises almost the entire patient sample. de Vogel, de Ruiter, van Beek, and Mead (2004) found that the Dutch version of the SVR-20 had good inter-rater reliability and predictive validity, both for the total score and the three subscale scores. The SVR-20 (sum of items score) significantly predicts sexual recidivism (Hanson & Morton-Bourgon, 2009).

In addition, participants completed self-report questionnaires with good psychometric qualities about trait anger (State–Trait Anger Scale [STAS]; Spielberger, 1980;

Dutch version: van der Ploeg, Defares, & Spielberger, 1982), hostility (Picture Frustration Study [PFS]; Rosenzweig, 1978; Dutch version: PFS-AV; Hornsveld, Nijman, Hollin, & Kraaimaat, 2007), aggression (Aggression Questionnaire–Short Form [AQ-SF]; Bryant & Smith, 2001; Dutch version: Hornsveld, Muris, Kraaimaat, & Meesters, 2009), and interpersonal anxiety/social skills (Inventory of Interpersonal Situations [IIS]; van Dam-Baggen & Kraaimaat, 2000).

Procedure

All potential participants received an information letter describing the study. This letter clearly stated that participation was voluntary, data would be processed anonymously, refusing to participate would not influence the participant's treatment in any way, and that participation would be rewarded with a monetary compensation of 15 Euros. Participants had approximately 1 week to consider their potential participation, after which they signed an informed consent form.

For most participants, the IAT measures and self-report questionnaires were completed within one testing session, but this was not always possible (e.g., due to time constraints). In these cases, questionnaires and IAT measures were completed within the same week. The order in which IAT measures and questionnaires were administered was counterbalanced. When conducting the IAT measures, all participants started with the standard valence IAT to familiarize them with the procedure. The order of the submissive–sexy IAT and child–sex IAT was again counterbalanced across participants. All measures were conducted individually in separate testing rooms at the forensic hospitals. The SVR-20 was scored by certified clinical psychologists and obtained as part of the standard screening protocol of the institutions. Unfortunately, two SVR-20 scores (one child abuser and one rapist) could not be obtained.

Results

IAT Effects

Sixteen patients (1 non-sexual offender on the standard valence IAT, 4 child abusers, 3 rapists, and 8 non-sexual offenders on the submissive–sexy IAT) had a total error rate above 25% and were therefore excluded from the corresponding analyses.

On the standard valence IAT, all three offender groups associated "flowers" with "pleasant" and "insects" with "unpleasant" more strongly than "insects" with "pleasant" and "flowers" with "unpleasant". As shown in Table 1, average D scores were all negative: -0.93 ($SD = 0.37$) for child abusers, -0.94 ($SD = 0.34$) for rapists, and -0.81 ($SD = 0.42$) for non-sexual offenders. A one-way ANCOVA with age as the covariate revealed no significant differences among the three groups, $F(3, 118) = 1.51$, $p = .23$. As the procedure of all IAT measures was identical, the absence of significant differences on the standard valence IAT implies that any significant differences on the other IAT measures cannot be attributed to methodological issues.

Table 1. *D* Scores and Standard Deviation for Child Abusers, Rapists, and Non-Sexual Offenders on the Implicit Association Tests.

Association	Child abusers M (SD)	Rapists M (SD)	Non-sexual offenders M (SD)	Statistics
Submissive–sexy[1]	0.18 (0.61)[a]	−0.29 (0.51)[b]	−0.17 (0.50)[a,b]	$F(3, 104) = 4.37$
Child–sex[2]	0.13 (0.49)[a]	−0.16 (0.39)[b]	−0.23 (0.36)[b]	$F(3, 119) = 5.26$
Insect–pleasant[3]	−0.93 (0.37)	−0.94 (0.34)	−0.81 (0.42)	$F(3, 118) = 1.51$

Note. Means not sharing a similar superscript differ at *p* < 05.
[1]Positive scores indicate that "submissive" is more strongly associated with "sexy" than "dominant" with "sexy."
[2]Positive scores indicate that "children" is more strongly associated with "sex" than "adults" with "sex."
[3]Positive scores indicate that "insects" is more strongly associated with "pleasant" than "flowers" with "pleasant."

On the sex-relevant IAT versions, groups displayed more divergent results. As hypothesized, child abusers more strongly associated "submissive" with "sexy" as indicated by their positive mean score of 0.18 (*SD* = 0.61), whereas the rapists (*M* = −0.29, *SD* = 0.51) and non-sexual offenders (*M* = −0.17, *SD* = 0.50) more strongly associated "dominant" with "sexy" as indicated by their negative mean scores (see Table 1). An ANCOVA revealed that there was a significant main effect of offender group, $F(3, 104) = 4.37$, *p* < .05. Contrast tests showed that only the *D* score of the child abusers significantly differed from that of the rapists (*p* < .01). Effect sizes (Cohen's *d*) and 95% confidence intervals (CIs) were computed with the unadjusted means and standard deviations for all comparisons. The difference between the child abusers and rapists was large, *d* = 0.85, 95% CI = [0.30, 1.40]. The difference between child abusers and non-sexual offenders was non-significant in the contrast test (covariate *age* accounted for the non-significance) but nonetheless in the moderate range, *d* = 0.65, 95% CI = [0.16, 1.15].

As expected, child abusers also associated "children" with "sex" more strongly than "adults" with "sex" as indicated by the positive mean score of 0.13 (*SD* = 0.49). The rapists (*M* = −0.16, *SD* = 0.39) and non-sexual offenders (*M* = −0.23, *SD* = 0.36), however, associated "adults" with "sex" more strongly than "children" with "sex," as indicated by their negative mean scores (see Table 1). The ANCOVA revealed that there was a significant main effect of offender group, $F(3, 119) = 5.26$, *p* < .01. Contrast tests showed that the *D* score of the child abusers differed significantly from that of the rapists (*p* < .05) and the non-sexual offenders (*p* < .01). The difference between child abusers and rapists was found to be moderate, *d* = 0.66, 95% CI = [0.16, 1.17], whereas the difference between child abusers and non-sexual offenders was large, *d* = 0.89, 95% CI = [0.42, 1.36].

To determine the incremental value of the submissive–sexy IAT in differentiating child abusers from other offenders, a multinomial logistic regression analysis was conducted in which group membership was identified based on submissive–sexy

Table 2. Main Results of the Multinomial Logistic Regression Analysis Predicting Child Abuser Status Versus Other Offender Types From IAT scores.

IAT	Child abusers (n = 24) vs. rapists (n = 33)			Child abusers (n = 24) vs. non-sexual offenders (n = 51)		
	OR [95% CI]	B (SE)	p	OR [95% CI]	B (SE)	p
Block 1						
Child/sex	5.6 [1.5, 20.3]	−1.72 (0.66)	.01	8.7 [2.6, 29.8]	−2.17 (0.63)	.00
Block 2						
Child/sex	5.6 [1.3, 24.0]	−1.72 (0.75)	.02	7.7 [2.0, 30.3]	−2.04 (0.70)	.00
Submissive/sexy	5.7 [1.8, 18.3]	−1.75 (0.59)	.00	3.7 [1.3, 10.8]	−1.31 (0.55)	.02

Note. R^2 = .11 (Cox and Snell's), .13 (Nagelkerke's) for Block 1. R^2 = .18 (Cox and Snell's), .21 (Nagelkerke's) for Block 2. IAT = Implicit Association Test; OR = odds ratio; CI = confidence interval; SE = standard error.

and child–sex associations. As shown in Table 2, both associations significantly differentiated child abusers from rapists and non-sexual offenders. With every 1-point increase in submissive–sexy and child–sex associations, the odds for being a sexual offender against children, as compared with being a rapist, increased by 5.7 and 5.6. A similar pattern was found in the differentiation between child abusers and non-sexual offenders: Odds ratios for the submissive–sexy and child–sex associations were 3.7 and 7.7, respectively. Moreover, the IAT measures together differentiated these groups better than the child–sex IAT alone, as indicated by the improvement for Block 2 over Block 1 (reported in the table note). This improvement in differentiation for Block 2 over Block 1 (both measures vs. one measure) was also found when the submissive–sexy IAT was entered in the first block and the child–sex IAT entered in the second block. In passing, it should be noted that the correlation between submissive–sexy and child–sex associations was small and non-significant (r = .10) for the entire sample and moderate but non-significant (r = −.30) for child abusers only. These findings indicate that submissive–sexy associations are complementary to the child–sex associations in differentiating child abusers from other offenders, and that both types of implicit associations address different aspects of sexual interest relevant to child sexual abuse.

As a sexual preference for submissiveness is potentially relevant in the etiology of rape, an additional multinomial logistic regression analysis was conducted with rapists as the reference category. This analysis revealed that rapists could not be significantly differentiated from non-sexual offenders.

External Correlates

The potential contribution of submissive–sexy and child–sex associations in the (risk) assessment of child abusers was examined by correlating *D* scores with the SVR-20 (see Table 3). No correlation attained statistical significance. As to the relation between

Table 3. Pearson's *r* Correlations Between the IAT and the SVR-20 for Child Abusers.

		IAT	
Risk assessment	*M (SD)*	Submissive–sexy	Child–sex
SVR-20		(*n* = 23)	(*n* = 27)
Psychosocial Adjustment	12.32 (3.99)	.12	.09
History of Sexual Offenses	7.15 (2.67)	.26	−.25
Future Plans	2.00 (1.18)	−.22	.24
Total score	21.53 (4.95)	.21	.01

Note. IAT = Implicit Association Test; SVR-20 = Sexual Violence Risk–20.

the implicit associations and the self-report questionnaires, only two noteworthy results were found: Stronger child–sex associations were positively associated with the PFS-AV and two scales of the IIS. That is, child abusers with stronger child–sex associations reported more hostility ($r = .59$) and experienced higher levels of interpersonal anxiety when initiating contact ($r = .39$) and during positive self-statements ($r = .44$).

Regarding the rapists, no significant correlations between the submissive–sexy IAT and external correlates were found. However, one correlation between the child–sex IAT and other measures attained statistical significance: *D* scores of the rapists on child–sex IAT were significantly correlated with the SVR-20 subscale History of Sexual Offenses ($r = −.34$); a stronger association between "children" and "sex" was related to a lower recidivism risk as indicated by this specific subscale. Due to the exploratory nature of this study, no corrections were made for the number of calculated correlations, but note that if such corrections were made, none of the correlations would reach statistical significance.

Discussion

The primary goal of the current study was to examine whether child abusers are, on an implicit level, sexually attracted to submissiveness. Therefore, an IAT was used to assess submissive–sexy associations, which were then compared between child abusers and other offender groups. In addition, a multinomial logistic regression analysis was conducted to investigate whether submissive–sexy associations have any incremental value beyond the already well-established child–sex IAT in identifying child abusers status. Finally, the potential contribution of submissive–sexy and child–sex associations in the (risk) assessment of child abusers was explored.

As hypothesized, child abusers had significantly stronger submissive–sexy associations than rapists. In contrast with our expectations, child abusers could not significantly be differentiated from non-sexual offenders when age was included as a covariate, although a clear trend in the predicted direction was emerging. When age

was not included as a covariate, submissive–sexy associations indeed differentiated child abusers from both rapists and non-sexual offenders. Effect sizes indicated that these differences were all in the moderate to large range. The absence of significant or otherwise meaningful differences in submissive–sexy associations between rapists and non-sexual offenders appears inconsistent with previous research suggesting that dominance and power play an important role in the etiology of rape (Chiroro, Bohner, Viki, & Jarvis, 2004; Prentky & Knight, 1991). Assuming that our findings are replicable, it may be that rapists, unlike child abusers, are not especially attracted to submissiveness per se. However, it is still possible that attraction to more specific elements, such as subjugation and humiliation of victims (rather than their initial level of submissiveness), may play a role in rape (e.g., Proulx, Aubut, McKibben, & Côté, 1994).

Stronger child–sex associations also proved to be characteristic of child abusers. Effect sizes indicated that differences with other offenders were moderate to large, suggesting that child abusers are sexually attracted to children in particular, which sometimes contrasts with various child abusers' statements about their sexual orientation. The effect sizes were very similar to those found in a meta-analysis of studies using similar IAT measures (Babchishin, Nunes, & Hermann, 2013). Results of the current study are also consistent with the findings of the original study by Brown et al. (2009) who demonstrated (using a similar IAT) that sexual offenders with prepubescent victims clearly display stronger child–sex associations than non-sexual offenders (and sexual offenders with pubescent victims). However, our child abuser sample included both offenders against prepubescent and pubescent victims, which may have resulted in slightly weaker child–sex associations than we would have found otherwise.

The presence of both submissive–sexy and child–sex associations was more strongly associated with sexual offending against children, as compared with rape and non-sexual offending. Together these IAT measures were more effective in identifying child abuser status than either one alone. Moreover, the correlation between the submissive–sexy IAT and child–sex IAT was small and non-significant. These findings suggest that submissive–sexy associations are complementary to the child–sex associations in differentiating child abusers from other offenders, and that both types of implicit associations address distinct aspects of sexual interest associated with sexual offending against children.

The potential contribution of submissive–sexy and child–sex associations in the (risk) assessment of child abusers remains unclear. The non-significant correlations between the IAT measures and recidivism risk actually seem in line with the literature with inconsistent findings for the relationship between child–sex associations and risk (Babchishin, Nunes, & Hermann, 2013). More generally, the lack of a relationship with risk assessment scores may not be as problematic as it may first appear because risk assessment instruments usually reflect other predictors of recidivism besides sexual interests (e.g., general antisociality) and they do not completely overlap with actual recidivism (e.g., error).

Correlations between the implicit associations and external variables generally did not yield particularly impressive results. We expected to find significant correlations

between the implicit associations of child abusers and their risk of recidivism and interpersonal anxiety, but this was only the case for child–sex associations and interpersonal anxiety. Child abusers with stronger child–sex associations reported higher levels of anxiety during various types of social interactions. This seems to suggest that interpersonal anxiety is related to sexual interest in children. This finding is in line with earlier studies indicating that social anxiety is associated with pedophilia (Eher, Neuwirth, Fruehwald, & Frottier, 2003) and, more generally, sexual offending against children (Nunes, McPhail, & Babchishin, 2012). The hypothesized correlations between submissive–sexy associations and interpersonal anxiety within the child abuser sample were not found. Closer examination of the data revealed there were no significant group differences in interpersonal anxiety between child abusers, rapists and the non-sexual offenders. Recent meta-analytic research by Nunes et al. (2012), however, indicated that child abusers report significantly higher levels of social anxiety on the Social Avoidance and Distress Scale (SADS; Watson & Friend, 1969) than rapists and non-offenders. This suggests that the IIS used in the current study might be less useful than the SADS in assessing interpersonal anxiety in offender samples, consequently resulting in the absence of the expected correlations.

The finding that child abusers have a sexual preference for submissiveness appears to be consistent with previous research of Kamphuis and colleagues (2005) who suggested that child abusers associate "sex" with "power." In the current study the "submissiveness" was conceptualized as a characteristic of the child, while in the Kamphuis study "power" was conceptualized as a characteristic of the perpetrator. This suggests that child abusers associate themselves in a powerful position during sexual activities and children in a submissive position. However, it should be noted that the sample in the Kamphuis et al. study may have been more sexually aggressive toward adults than our sample, as suggested by their findings that the child abusers reported greater interest in and likelihood of forcing a woman to do something sexual than did the comparison groups of violent non-sexual offenders and university students. Thus, these child abusers may have indeed had stronger associations between "sex" and "power" than the comparison groups, but this may have had more to do with their propensity for sexual aggression against adults than their sexual offending against children.

In terms of measures, it is not uncommon to find poor agreement between different implicit measures (e.g., Fazio & Olson, 2003). Our pilot study indicated that the associations in the current study reflect a specific sexual preference for submissiveness. In contrast, the lexical decision task of the Kamphuis et al. study may have reflected a more general link between sex and power, such as an association between sex and dominating others. Moreover, IAT measures are thought to primarily reflect associations between the superordinate categories (e.g., submissive and sexy), whereas lexical decision task measures would reflect associations between the individual words because the superordinate categories (e.g., sex and power) to which they are assumed to belong are not presented (e.g., Fazio & Olson, 2003). Given these issues and the different stimuli and categories (implied in the lexical decision task), it is possible that these measures are assessing different constructs altogether. These issues could be explored in future research by administering both measures to the same sample.

This study provides evidence that submissive–sexy associations are relevant to sexual offending against children, but what exactly is being assessed by IAT measures remains unclear. We have interpreted our IAT measures as reflecting sexual interest in submissiveness versus dominance and children versus adults. However, the minimalist nature of the categories and stimuli (e.g., one or two words rather than complete sentences) required for these and many other implicit measures often creates ambiguity, which leaves responses open to multiple interpretations. For example, some researchers conceptualize the child–sex and similar IAT measures as assessing sexual interest in children (e.g., Babchishin, Nunes, & Hermann, 2013; Banse et al., 2010; Brown et al., 2009; Gray et al., 2005; Nunes et al., 2007), whereas others conceptualize them as assessing one of the implicit theories (or schemas) identified by Ward (2000) in which children are viewed as wanting and enjoying sexual contact with adults (e.g., Gannon & Polaschek, 2006; Gannon et al., 2007; Mihailides, Devilly, & Ward, 2004). Our results are consistent with both perspectives. Future research should address questions about the constructs assessed by these and similar implicit measures as well as larger issues regarding the overlap, distinctions, and relationship between sexual interests and beliefs supportive of sexual offending against children, such as implicit theories, schemas, cognitive distortions, and attitudes (e.g., Ó Ciardha, 2011).

One of the limitations of the current study concerns the operational definition of the patient samples. Because file data were used to define the different offender groups, it must be recognized that some patients might have been misclassified. That is, some patients may have committed a sexual offense for which they were not convicted, and/or some non-sexual convictions (e.g., burglary) might actually be sexually motivated (e.g., attempt to rape). Furthermore, it should be noted that this study was conducted with patients with severe Cluster B personality disorders, who were convicted of serious offenses, and stayed in a highly secure environment, and without care or treatment relapse would be deemed very likely. Nearly all child abusers (92.6%) had a sexual deviation often in combination with an extensive history of sexual and/or aggressive offenses, consequently resulting in a high risk of recidivism. This lack of variation may have attenuated some correlations between IAT effects and recidivism risk and therefore our findings might not be applicable to sex offenders in general.

This study explored the extent to which a sexual preference for submissiveness is complementary to a sexual preference for children in identifying sexual offenders against children. Results indicated that child abusers are sexually attracted to both children and submissiveness. This finding provides more insight into the origin of child sexual abuse, because not all child abusers have a sexual interest in children (Seto, 2008). Some child abusers do have an exclusive preference for children, but others are also sexually interested in adults or have a preference for adults. However, a better understanding of the construct validity of these IAT measures is required before they are used in the supervision, risk assessment, and treatment of child abusers. Although IAT measures may allow for a relatively easy, low-cost, quick and complementary method of assessing sexual interests, more research into the relation between IAT scores and sexual recidivism is required for a better understanding about its predictive validity.

Appendix A

Submissive–Sexy IAT.

Submissive	Dominant	Sexy	Not Sexy
Weak	Destroy	Beautiful	Yuck
Scrawny	Fight	Love	Disgusting
Quiet	Loud	Attractive	Impotent
Delicate	Powerful	Kiss	Stink
Gentle	Confident	Smile	Gross
		Orgasm	Ugly

Note. IAT = Implicit Association Test.

Appendix B

Child–Sex IAT.

Child	Adult	Sex	Not Sex
		Sex	Laugh
		Fuck	Eye
		Lick	Toe
		Cum	Elbow
		Cock	Run

Appendix B (continued)

Child	Adult	Sex	Not Sex
		Kiss	Smile
		Lust	Walk
		Suck	Knee

Note. IAT = Implicit Association Test.

Appendix C

Flower–Unpleasant IAT.

Flower	Insect	Pleasant	Unpleasant
		Beautiful	Accident
		Good	Cancer
		Health	Disaster

Appendix C (continued)

Flower	Insect	Pleasant	Unpleasant
		Honest	Pollution
		Laugh	Poverty
		Joke	Sickness
		Happy	Ugly
		Lucky	Vomit

Note. IAT = Implicit Association Test.

Notes

1. A complete list of the used Dutch translations can be obtained from the first author.
2. The incongruent condition was defined on the basis of the hypothesized deviant associations of child abusers.

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