Automatic Associations with "Erotic" in Child Sexual Offenders: Identifying Those in Danger of Reoffence

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Abstract

If sexual offence (rape or sexual abuse) has aspects of automatic rather than controlled behavior in the sense of being triggered by situational cues, it might be predicted better by reaction-time measures of automatic cognition rather than by questionnaires. Two Implicit Association Tests (IATs) were used to test whether male pedophile and sadistic offenders (N = 46) differ from each other and from a male control group (N = 47) with regard to their automatic associations of erotic. The first IAT tested associations of erotic with child versus woman, the second IAT tested associations of erotic with harmony versus humiliation. Supplementary scales concern social desirability, locus of control, behaviour control, and evaluation of aims. First, no evidence for the validity of the humiliation-erotic IAT could be found. Second, offenders who were rated to be in danger of relapse by their therapists, and those rated to be exclusively pedophile, showed an increased child-erotic association as compared to the other groups.

Key words: Implicit Association Test; Implicit Cognition; Sexual Offenders; Pedophile Offenders; Recidivism

An ultimate goal in the treatment of sexual offenders is preventing reoffence. Recent reaction-time based measures of implicit cognition could contribute to reaching that aim. First, if offenders know the desired responses in clinical interviews, social desirability is a big concern, and faking is reduced with implicit measures (Steffens, 2004). Second, implicit cognition need not be open to introspection (Greenwald & Banaji, 1995), but could still be related to delinquent behaviour if this behaviour has spontaneous components. Thus, implicit measures might reveal differences between groups of offenders of which they are not aware. The aim of the present study was testing whether Implicit Association Tests, IATs (Greenwald, McGhee, & Schwartz, 1998), can detect differences between subgroups of sexual offenders.

Psychology has, for decades, primarily targeted explicit or controlled processes. There is now much consensus that automatic processes also play a crucial role for guiding behaviour (e.g., Greenwald & Banaji, 1995). Models specify different routes to behaviour (e.g., Strack & Deutsch, 2004). In order to predict automatic behaviour that is beyond self-presentation or image management, implicit measures might be better suited than questionnaires. Similar to the normally time-pressured reactions in implicit measures, automatic behaviour may be triggered by situational cues. For instance, a person may know that sexual child abuse is wrong, but views of children might still activate a set of associations involving sexual arousal and positive stimulation. In the absence of the capacity to counteract these impulses, child abuse would then be more likely than for other persons who do not possess these associations.

The most extensively used implicit measures are IATs (Greenwald et al., 1998). IATs' rationale is that people react faster if associated concepts require the same reaction, and slower, if associated concepts require different reactions. The difference in reaction times between two tasks, the IAT effect, is taken as an indicator of association between concepts. For example, a person's reaction time is measured in a task where the concepts 'erotic' and 'woman' require one reaction (e.g., a left key press), and 'not erotic' and 'child' require a different reaction (right key press). Stimuli (e.g., pictures or words) are presented that are each associated with one concept. The average reaction time in this woman+erotic task is compared to that in a task where 'child' and 'erotic' are paired versus 'woman' and 'not erotic' (the child+erotic task). People who react faster in the woman+erotic than in the child+erotic task are assumed to possess a higher association between the concepts 'woman' and 'erotic'. For a recent review of evidence for the validity of IATs, see Lane, Banaji, Nosek, and Greenwald (2007).

One of the major assumptions in the scientific discussion about pedophilia is that pedophiles are sexually attracted to children (Seto, 2008). However, respective assessment tools rely on self-reports of offenders' sexual attraction to children and beliefs about children and sexuality. This is far from being ideal given the strong motivation of pedophile offenders to disguise both their impulse to offend and their sexual attraction toward children (Gray, Brown, MacCulloch, Smith, & Snowden, 2005). In only a few published studies to date IATs were applied. Differences were found between child sexual offenders and control groups with regard to implicit associations of children and sex (Gray et al., 2005; Mihailides, Devilly, & Ward, 2004; Nunes, Firestone, & Baldwin, 2007). IATs thus seem promising tools to investigate cognitions associated with sexual abuse of children.

The present study supplements previous studies in the following respects. First, one unexpected finding in previous studies was an association between children and sex in control groups that was stronger than expected (Nunes et al., 2007), and a misclassification of many control participants on the basis of the IAT (Gray et al., 2005). At the same time, Steffens and colleagues (2008) showed that apparent associations between superordinate concepts (e.g., 'women' and 'erotic') can be changed by exchanging the stimuli representing them. For instance, if the concept woman is represented using different first names, the apparent association of woman with erotic could be changed simply by exchanging these names. Thus, here we use IATs that do not include arbitrary associates of the concepts as stimuli, but we present only the concepts themselves and synonyms of them (e.g, child, children, woman, women; see Method). The hypothesis is that the resulting association scores differ between groups for whom children versus women afford stronger connotations with erotics. Also, offenders' associations with 'erotic' were tested (not with 'sex').

Second, in previous IAT studies, not much attention has been paid to the operationalisation of pedophilia as a psychiatric diagnosis as opposed to child sexual abuse as an offence. Child sexual offenders form a heterogeneous group, and it is estimated that about half of them are pedophiles (Seto, 2008). Thus, we tried to identify subgroups of child sexual offenders (exclusive pedophile or not, in danger of relapse or not) with our IATs.

Third, in addition to pedophile offenders, we tested the automatic associations of rapists. Implicit associations of rapists might be special in that they associate a power difference and force with erotic, instead of equal status or harmony. In addition to an IAT measuring the woman+erotic versus child+erotic association, we measured the humiliation+erotic versus harmony+erotic association.

Method

Participants

Participants were 46 offenders living in a social-therapeutic setting in Germany who participated voluntarily in the study. Their mean age was 39 years (*SD* = 8). One fifth of them had left school without a diploma, half of them had finished the lowest school track, and only a few had finished higher education. Half of them were single, one third was separated or divorced, every eighth had a partner. We had no access to clinical and diagnostic information about offenders, but their primary psychologists were allowed to inform us. Offenders had been in the setting for an average of 21 months (between 2 and 52 months, *SD* = 13); 21 of them were classified as primarily rapists (1 to 3 on a scale from '1, exclusively rapist' to '7, exclusively pedophile'), 17 as primarily pedophiles (and 8, intermediate). Thirty were classified as 'nonexclusive pedophile', 16 were rated 'exclusive pedophile'. Whereas 23 of the total sample were rated 'not sadistic', 21 were rated 'sadistic'. Psychologists also rated 30 of the offenders as in danger of relapse if they were immediately released and 16 as not in danger of relapse.

About half of the offenders served as control group for the other offenders. Therefore, we did not strive for obtaining an additional parallel control group. Additional data were however collected from 47 male students (age: *M* = 24, *SD* = 3) at a German university. They received course credit for participating. Three fifths of them had a partner, the others were single.

Materials

Questionnaires. For assessing *social desirability*, we used the "Soziale-Erwünschtheits-Skala , SES-17 (Stöber, 1999), 17 questions with a dichotomous response option. One dimension of self regulation, *assessment*, was collected using one subscale of the Locomotion-Assessment-Questionnaire, LAF (Sellin, Schütz, Kruglanski, & Higgins, 2003). Assessment is the tendency to carefully evaluate decisions (10 items, with 6-point Likert-type scale). *Self-efficacy* was estimated using two subscales of the Questionnaire on Locus of Control and Competence, FKK (Krampen, 1991). Two 8-item subscales, internalized generalized locus of control (FKK-I) and generalized ability-related self concept (FKK-SK), were used (6-point scale). For assessing conscientiousness, three subscales of the Trier Integrated Personality Inventory, TIPI (Becker, 2003) were used. Subjective importance of sexuality was assessed using three questions (see Appendix for these and the following questions), *rape myth acceptance* was assessed using three items (Burt, 1980), and *myths about child sexual behaviour*, four items.

Implicit Measures. The IATs were constructed after a pilot study with independent participants. Both IATs used on one dimension the concepts *erotic* versus *not erotic* (stimuli: *erotic, arousing; not erotic, asexual*). On the other dimension, the child-erotic IAT used the concepts *child* versus *woman* (stimuli: *child, children; woman, women*); the humiliation-erotic IAT used *humiliation* versus *harmony* (stimuli: *humiliation, degradation; harmony, equality*).

Procedure

In a quiet room, each participant signed an informed consent form assuring complete anonymity. Data collection was controlled by an iBook computer. In order to avoid confounds between procedural and person-related variance, all tasks were administered in the same order to all participants. Initially, participants were asked to respond, using the computer mouse, to the rather inconspicuous questions concerning relationship status and educational level, followed by statements concerning the internalized generalized locus of control and generalized ability-related self concept and the assessment scale. Then, they reacted to the child-erotic IAT (the procedure

followed that of Steffens, 2004; Steffens et al., 2008).

The first, second, and fourth task were practice tasks (8 trials each, with the concepts woman versus child; erotic versus not erotic; and child versus woman, on the left versus right, respectively). Each critical task consisted of two blocks of 60 trials each. In the woman-erotic task, woman and erotic were shown on the upper left of the computer screen and child and not erotic, on the upper right. Participants were instructed that related words would appear, one after the other, in a random order in the middle of the screen, and they should press a response key on the left for each word related to woman or erotic and a response key on the right for each word related to child or not erotic. The subsequent stimulus appeared 200 ms after a key press. In case of an error, "F! flashed for an additional 200 ms. After each task, participants received feedback on their average reaction time and number of errors committed. If they committed 10% or more errors, they were asked to respond more slowly and make fewer errors. In the final, child-erotic task, child and erotic were shown on the upper left of the computer screen and woman and not erotic, on the upper right. This task order biases the IAT towards the woman-erotic association practiced first (cf. Greenwald et al., 1998).

Conscientiousness was assessed between the IATs. The second IAT was identical to the first, except that the woman-child dimension was exchanged with harmony-humiliation. The harmony-erotic task was assessed first. The final questionnaires assessed social desirability, importance of sexuality, rape myth acceptance, and myths about child sexual behavior. Finally, participants were fully debriefed.
The primary psychologist working with each offender provided the following information on sheets with anonymous codes: Length of time the offender had been in the therapeutic setting; type of offender (rapist or pedophile); degree of sadistic and pedophile fixation; and prognosis of relapse in case of immediate release.

Results

In all analyses in the present article, significance tests were conducted with alpha ≤ .05 (two-tailed unless mentioned). Individual *p*-values are omitted for statistically significant effects. As an indicator of the effect size, a measure of the variance explained, R^2_p, is reported.

Questionnaire findings

For internal consistencies and scale means, see Table 1. Offenders reported higher conscientiousness than students did and *less* rape myth acceptance. Reported self-efficacy of offenders was lower than that of students. There was not more socially desirable responding among offenders than students, no differences concerning the self regulation, assessment scale, the reported importance of sex, and myths about child sexual behaviour. The only differences *between types of offenders* concerned myth acceptance: Rapists scored *lower* on rape myth acceptance than pedophiles, and lower on myths about child sexual behaviour.

Scale:	α	Participant group			Statistical comparisons	
		Pedophile offenders (N = 17)	Rapists (N = 21)	Students (N = 47)	Offenders vs. students	Pedophile offenders vs. rapists
Social desirability	.71	1.46 (.18)	1.47 (.16)	1.50 (.22)	$\lvert t \rvert < 1$	$\lvert t \rvert < 1$

Table 1: Internal Consistencies (Cronbach's alpha) of Scales and Means (with SDs) of Offenders Classified as Pedophile Offenders versus Rapists, and of Students. (Note: Different superscripts in the same row refer to statistically significant differences between groups. *a* and *b* refer to differences between the offender group and the student group. *1* and *2* refer to differences between the offender groups.)

Implicit measures

We computed the IAT effect as the difference between average millisecond reaction times in the critical IAT tasks, divided by each participant's overall standard deviation across these tasks (cf. Lane et al., 2007). Error reaction times were included in the analysis. We estimated internal consistencies (based on the IAT effect for each of the 8 different stimuli) as alpha = .83 in the child+erotic and alpha = .82 for the humiliation+erotic IAT.

Figure 1 shows the IAT effect in milliseconds. The child-erotic association was relatively larger for offenders classified as exclusive pedophile than for other offenders (one-tailed, $t(44) = 1.72$, $R^2_p = .06$), an effect also present if the subgroup of primarily pedophile offenders is analysed (and those who are primarily rapists excluded), $t(15) = 2.10$, $R^2_p = .23$. Moreover, the child-erotic association was larger in offenders who were classified as in danger of relapse (statistically significant for all offenders, $t(44) = 3.19$, $R^2_p = .19$, as well as for primarily pedophile offenders, $t(15) = 1.83$, $R^2_p = .18$). Moreover, none of these factors had any effects on the humiliation-erotic IAT (all ts < 1). The overall child-erotic association of all offenders taken together did not differ from that in the student control group ($t < 1$).
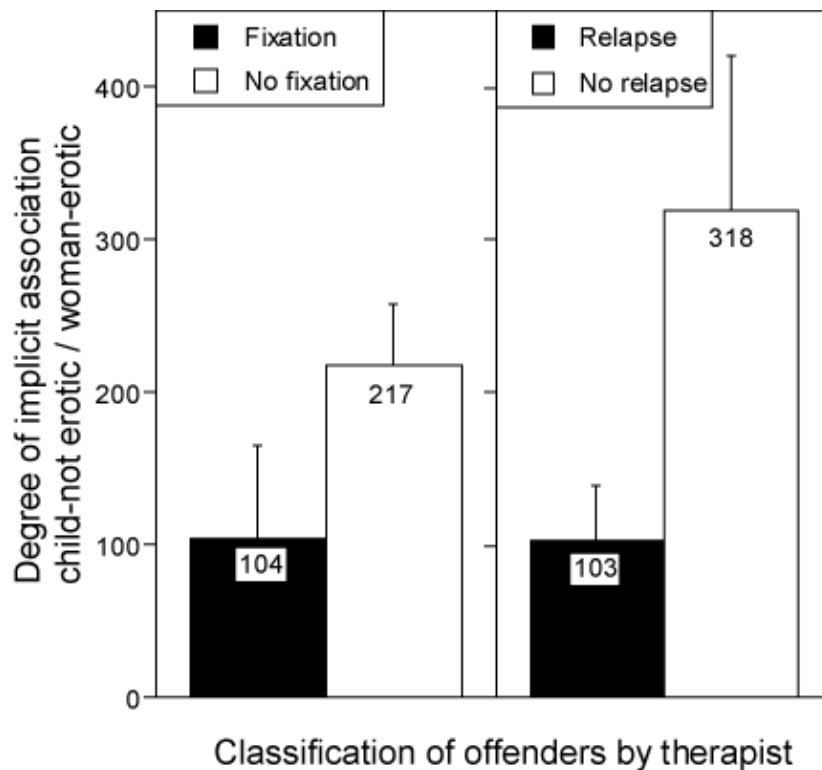
Figure 1: Mean implicit associations child-not erotic/women-erotic of offenders (in milliseconds), classified as exclusively pedophile (fixation) or not (no fixation), and as being in danger of relapse or not. Error bars show standard errors of means.

In a discriminant analysis based on the effects in the child-erotic IAT, 25 of 30 offenders "in danger of relapse were classified correctly (cases correctly classified: 64%; chi^2 (1) = 9.05). Among the subgroup of child sexual offenders, 10 of 11 offenders "in danger of relapse were classified correctly (cases correctly classified: 77%, chi^2 (1) = 2.92, one-tailed).

We tested in a regression analysis whether the IAT effect shows incremental validity over self-report for predicting relapse. First, the higher an offender rated their self-efficacy, the lower psychologists rated their danger of relapse beta = -.50). Second, the higher the child-erotic association, the higher psychologists rated their danger of relapse (beta = -.32) (overall model: $F(2,43)$ = 15.73, R^2 = .42). None of the other measures significantly explained additional variance.

Findings of the humiliation-erotic IAT were uninteresting. A strong harmony-erotic association was found both for students and offenders (M = 326 ms, difference: $t < 1$). Rapists showed a comparably low humiliation-erotic association as pedophile offenders did ($t < 1$). When two outliers in the humiliation-erotic IAT (more than 2 SD below the group mean) were excluded, a comparison of non-sadistic and sadistic rapists yielded no differences, either.

Discussion

The aim of the present study was to test two new implicit measures for the differentiation between groups of sexual offenders, one IAT on the association of children versus women with erotic and the other, harmony versus humiliation with erotic. We were unable to detect any difference on the

harmony-erotic IAT between rapists and pedophiles or students. Similarly, none of the questionnaire measures detected differences between rapists and the control groups. With the child-erotic IAT, exclusively pedophile offenders, or those classified as in danger of relapse, showed a relatively larger child-erotic association than other offenders. In a regression analysis, in addition to an offender's self-rated self-efficacy, the child-erotic association explained variance in danger of relapse. These are indicators of incremental validity of the child-erotic IAT. By comparison, there were hardly any differences between participant groups on questionnaire measures.

There are two possible explanations for the lack of effects on the harmony-erotic IAT. Either there are no differences between rapists and non-rapists in implicit associations, or our IAT did not detect them, for instance, because the stimuli were rather sophisticated words that might not be over-learned enough to elicit spontaneous associations. Moreover, humiliation is not a concept with a clear opposite pole (such as male-female). In hindsight, the overlap in valence between the harmony and the erotic stimuli might have been too substantial to allow for detecting differences. Another option why we did not find effects on the harmony-erotic IAT is that rapists do not differ from other men in their associations of humiliation with erotic. In this vein, men who become rapists and those who don't would differ along other dimensions. It could also be that only the rapists in our sample, who had been in therapy for a while, did not differ from the control groups anymore.

The child-erotic IAT was able to identify offenders classified as in danger of relapse and those classified as exclusively pedophile. A limitation of this finding is that offender classifications were made by their therapists and thus are subjective. Given this (known) judgment, we were able to demonstrate incremental validity in that IAT. However, the ultimate criterion for its incremental validity would be that the IAT predicts relapse better than a therapist or an instrument to assess risk of sexual recidivism (Nunes et al., 2007). Until this is accomplished, the present findings must be viewed cautiously.

The overall child-erotic association in our offender group did not differ from that in the student control group. One reason for this is that offenders classified as not exclusively pedophile or as not in danger of relapse descriptively showed a weaker association of children with erotic (and a stronger association of women with erotic). It is an open question whether this is an effect of their treatment or an a priori difference between offenders and non offenders. For now, we conclude that the child-erotic IAT appears useful only with exclusive pedophiles.

The sensitivity of the child-erotic IAT might be increased in several ways. First, it could be that pictures of women and children, rather than words, possess more power to trigger the respective associations. Second, a large proportion of pedophile offenders are referred to as homosexual pedophile offenders because their victims are boys, not girls. Our child-erotic IAT may not have captured their associations, and using different IATs for pedophile offenders with exclusively male or female victims might be more appropriate.

Whereas it remains to be shown whether the predictive validity of the child-erotic IAT can be improved, the present study yielded first evidence that such an IAT could become an additional instrument for assessing implicit associations in different subgroups of pedophile offenders and thus nicely complements previous studies with implicit measures (Gray et al., 2005; Mihailides et al., 2004; Nunes et al., 2007). A very promising avenue for future research would be testing whether therapeutic interventions can change implicit child-erotic associations and whether implicit associations actually predict reoffence.

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Appendix A: Sexuality-related Questionnaires

Importance of sex

1. Ich bin ein Mensch, der nur sehr schwer auf sein Sexualleben verzichten kann. (I am one of those humans who can hardly do without their sex life.)
2. Klappt es nicht im Bett, hat eine Partnerschaft wenig Sinn. (There is no point in a close partnership if it does not work out in bed.)

3. Sex ist für mich sehr wichtig. (Sex is very important to me.)

Rape myth acceptance

1. Eine Frau wird einen Mann nur dann respektieren, wenn er klar macht, nach welchen Regeln gespielt wird. (A woman will respect a man only if he makes it very clear what the rules of the game are.)
2. Ein Mann muss einer Frau von Anfang an zeigen, wer die Hosen an hat, oder er wird bald unter dem Pantoffel stehen. (A man has to show a woman from the very beginning who wears the breeches, otherwise he will be henpecked.)
3. Einer Frau, die eingebildet ist und denkt, sie wäre zu gut, um mit den Jungs auf der Straße zu sprechen, verdient es, dass man ihr eine Lektion erteilt. (A woman who is too stand-offish to talk to the guys in the street deserves a lesson.)

Myths about child sexual behavior

1. Wenn ein 13 Jahre altes Kind mit einem Erwachsenen flirtet, bedeutet dies, dass das Kind Sex mit dem Erwachsenen haben möchte. (A 13 year old who flirts with an adult wants to have sex with them.)
2. Die meisten Kinder mit 13 Jahren oder jünger hätten gerne Sex mit einem Erwachsenen, und das würde dem Kind für die Zukunft nicht schaden. (Most children aged 13 or younger want to have sex with an adult, and that would not damage the child.)
3. Es ist besser, Sex mit einem Kind zu haben, als fremdzugehen. (It is better to have sex with a child than to cheat on one's partner.)
4. Wenn ein Kind vor einem Erwachsenen nackt oder nur wenig bekleidet umherläuft, versucht es ihn damit zu erregen. (If a child runs around naked or almost naked in front of an adult, it wants to arouse them.)

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