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Validation of direct and indirect measures of preference for sexual violence

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Abstract

Individuals differ in the extent to which they are interested in sexualized violence as displayed in the frequent but not ubiquitous sexual interest in consensual acts of violent sexual roleplay and violent pornographic media in the normal population. The present research sought to develop and validate a multi-method asessment battery to measure individual differences in the preference for sexualized violence (PSV). Three indirect measures (Implicit Association Test, Semantic Misattribution Paradigm, Viewing Time) were combined in an online study with 107 men and 103 women. Participants with and without an affiliation with sadomasochistic sexual interest groups were recruited on corresponding internet platforms. Results revealed that all three indirect measures converged in predicting self-reported sexual interest in non-consensual sexuality. Specifically, for men all indirect measures were related to non-consensual sadistic sexual interest, whereas for women an association with masochistic sexual interest was found. Stimulus artefacts versus genuine gender differences are discussed as potential explanations of this dissociation. An outlook on the usability of the assessment battery in applied settings is delivered.

Key Words: indirect measures; sexual interest; sexual sadism; sexual masochism; sexual violence

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Individuals differ in the extent to which they are interested in sexualized violence. This is, for example, displayed in a considerable but not ubiquitous demand for pornography depicting sexualized forms of violence: Up to 40% of pornographic media contain violent elements, with bondage as the most prominent form (up to 25%; Barron & Kimmel, 2000). Domination and submission is the eleventh most frequent sexual interest search category on the internet (Ogas & Gaddam, 2012). Moreover, special interest groups in sexual activities that involve explicit consensual sexualized violence ("Bondage and Discipline, Dominance & Submission, Sadism & Masochism", short: BDSM) are widespread. Although desirable for both theoretical and applied purposes, a reliable and valid assessment of preferences for sexualized violence (PSV) is, however, fraught with difficulties. The present research aims at complementing existent assessment methods by introducing and validating an indirect (partly latency-based) multi-method approach to assess PSV that has the potential to circumvent prototypic shortcomings of self-report measures/interviews.

Perspectives on Preferences for Sexualized Violence

Several approaches to understand PSV are discussed in the literature. First of all, sexual behavior where "the interaction between the partners is concentrated on inflicting and receiving physical and psychic pain, or on ritualized submission and dominance" (Spengler, 1977, p. 442) is a relatively frequent phenomenon among normal populations. In a study by Richters et al. (2008), 2.2% of the male and 1.3% of the female participants who were sexually active within the last year reported a personal involvement in BDSM activities. Donnelly and Straus (1994) found 61% of college students to be sexually aroused when fantasizing about or participating in

BDSM activities. As such these sexual interactions per se do not violate the interest of any person involved as long as mutual consent is present. BDSM-affiliates and their advocates stress the legal character of their sexual practices by claiming them to be "safe, sane and consensual" (title of an edited monograph on BDSM by Langdridge & Barker, 1997).

From a clinical perspective, PSV can be diagnosed as a form of sexual preference disorder (paraphilia) for which the official standardized classification systems provide the diagnoses "sadomasochism" (ICD-10 F65.5) or "sexual masochism" and "sexual sadism" (DSM-5 302.83 and 302.84, respectively) *only if associated with distress to oneself or harm for others*. In forensic contexts, PSV have been established as an important risk factor for sexual reoffending (Kingston, Seto, Firestone, & Bradford, 2010; Mann, Hanson, & Thornton, 2010). This means, PSV play an important role as a maintaining factor for a subgroup of sexual offenders that is particularly prone to show sexual behavior involving coercion carried out against somebody's will which constitutes a criminal act (e.g., Thornton, 2010). Most sexual offences, however, lack sadistic features and rather seem to be associated with a general antisocial lifestyle of the offenders (Hanson & Bussière, 1998; Lalumière et al., 2005) than PSV per se. Only for a small proportion of rapists (5 to 10%) the diagnosis of "sexual sadism" or "sadomasochism" is indicated, but it has to be noted that prevalence estimates highly depend on the diagnostic criteria used (Yates, Hucker, & Kingston, 2008).

To date, there is no consensus among scientists whether PSV lived out within a consensual sadomasochistic context or with a non-consenting victim differ qualitatively or only quantitatively. Some authors stress the indispensability to clearly differentiate qualitatively between the two (e.g., Fiedler, 2004, speaking of "pericular" and "inclining" sadism), claiming that research so far does not justify assigning a common etiological pathway to these two forms

of sexualized violence. Nevertheless, there are also reasons for a quantitative distinction, with consensual sadism simply being a milder variant of non-consensual sexual sadism. From Marshall's (2007) point of view, paraphilic interests should in general be comprehended in terms of a continuum ranging from normal to deviant. In the ICD-10 (World Health Organization, 2007), a dimensional approach is promoted as well, as milder variants of sadomasochism can also be part of an otherwise more conventional sexual repertoire (Berner, Berger, & Hill, 2003). This underscores that independent of a normal or abnormal psychological perspective a crucial distinction between consensual sadistic, masochistic, and non-consensual sadistic sexual preferences has to be drawn which will be kept in the course of this paper.

Assessment Issues

Previous efforts to reliably assess PSV have predominantly been based on direct self-report measures such as questionnaires and interviews. However, especially when sexual preferences lack social acceptance or are considered as pathological – and thus become relevant for legal decision makers impacting individuals' personal freedom – their assessment utilizing the common methods is a challenging task. Direct measures completely rely on the truthful self-report of the interviewee, which is especially problematic in the forensic context (Kalmus & Beech, 2005). The only existing alternative diagnostic approaches – predominantly developed for forensic purposes – have been based on either physiological (i.e., penile plethysmography/phallometry) or (offence-) behavioral indicators of PSV. On the one hand, phallometric testing, despite its well established validity, is fraught with several shortcomings such as low reliability, lacking standardization, fakeability and ethical concerns (Marshall & Fernandez, 2000). On the other hand, in the case of inferring sadistic sexual preferences from offence-behavioral indicators clinicians and researchers are facing serious diagnostic problems.

In their review, Marshall and Kennedy (2003) pointed out that the diagnosis of sadism is often based on inconsistent and idiosyncratic criteria and that sadists cannot be reliably discriminated from non-sadists when applying the criteria of the official standardized classification systems (for a proposal of valid file-based behavioral sadism indicators in forensic contexts see Mokros, Schilling, Eher, & Nitschke, 2012). Independent of an actual clinical diagnosis, however, a thorough measurement of the underlying sexual interest is needed to further our knowledge about this phenomenon. In the case of atypic sexual interest, this faces the challenge that all too often, sexual fantasies and behaviour perceived as uncommon and tabooed will not be self-reported truthfully. As a general problem of self-report, respondents might show limitations in (a) their motivation to report certain psychological content they are aware of, (b) their opportunity to report specific content as self-report questionnaires usually are constrained in item content and answer formats, (c) their ability to translate psychological content into self-report, and (d) their introspective awareness as specific content might simply might be inaccessible (Nosek, Hawkins, & Frazier, 2011). The current status quo can thus be characterized by a lack of assessment tools that complement existing approaches without iterating their problems.

Indirect Latency-Based Assessment Procedures

There is a longstanding tradition in social cognition research to use indirect (latency-based) measures to overcome the drawbacks of self-report measures that are specifically vulnerable to social desirability as, for example, in the domain of prejudice and stereotypes. Hence, a plethora of indirect measures have been developed that are related to direct measures but at the same time are incrementally valid to self-report assessments (Nosek et al., 2011). More recently, these measures have been successfully adapted to assess sexual interests (for pedophilic sexual interest see Schmidt, Banse, & Imhoff, in press; Snowden, Craig, & Gray, 2011) and

incremental validity above and beyond self-report measures has been demonstrated as well (Banse, Schmidt, & Clarbour, 2010). Indirect measures use latencies or probabilities as indicators of mental associations without necessarily requiring awareness of the actual relationship between the response and the assessed content. In consequence, indirect measurement approaches address all of the abovementioned limitations of self-report measures because participants who are not aware of the underlying measurement rationale are less able to deliberatively manipulate their responses as indirect tasks usually prompt automatic (i.e., fast) reactions towards differential stimulus categories (i.e., violent vs. non-violent sexuality).

The most prominent indirect measure in the social cognition domain is the Implicit Association Test (IAT)[1], introduced by Greenwald, McGhee, and Schwartz (1998). The IAT is a latency-based measure consisting of two double discrimination tasks, assessing associative strengths between target categories (e.g., men vs. women) and attribute categories (e.g., sexually exciting vs. sexually unexciting), both arranged on bipolar dimensions. Participants are asked to classify word or picture stimuli that represent these four categories (e.g., images of men vs. women, words representing sexual excitement vs. no excitement) using two response keys, each assigned to two of the four categories. It is assumed that the response latency for correct classifications is accelerated if two closely associated concepts share the same response key (compared to trials in which they are assigned to different response keys). The underlying process is most likely an effect of response interference if two not associated concepts share the same response key (Gawronski, Deutsch, & Banse, 2011). Recently, in a meta-analysis it has

[1] For a more detailed description of the IAT and the following two indirect measures please refer to the Measures section of this article.

been shown that the IAT can be adapted into a valid measure of deviant (i.e., pedophilic) sexual preferences (Babchishin, Nunes, & Hermann, 2013).

Another indirect latency-based measure specifically developed for the assesment of sexual interest is the Viewing Time Procedure (VT; e.g., Banse et al., 2010; Harris, Rice, Quinsey, & Chaplin, 1996). Participants rate the sexual attractiveness of target persons while response latencies are unobtrusively recorded. This paradigm not only yields explicit judgements but also an indirect measure of individual sexual interest, as images that are sexually attractive commonly evoke longer latencies than non-attractive stimuli (Imhoff, Schmidt, Nordsiek, Luzar, Young, & Banse, 2010). The major factors in driving this effect are task demands: Whereas denying sexual attraction is a fast rejection process, affirming sexual attraction requires a more profound scrutinizing of stimuli features (Imhoff, Schmidt, Weiß, Young, & Banse, 2012). That means, it is not the attention-grabbing power of the stimulus per se but the amount of time needed to reach a task-adequate response that drives the VT effect.

A third popular indirect assessment paradigm is the Affect Misattribution Procedure (AMP) introduced by Payne et al. (2005). In the standard AMP, briefly presented prime stimuli are followed by Chinese ideographs as neutral target stimuli. These target stimuli have to be evaluated in terms of their valence. Considerable prime effects on target ratings could be shown even if the participants were explicitly warned not to pay attention to the prime pictures (Payne et al., 2005). Recent research suggested that changing the task from an evaluation task to a semantic task by asking the participant to guess the target meaning produces equally meaningful results (Blaison, Imhoff, Hühnel, Hess, & Banse, 2012), also in the assessment of sexual orientation (Imhoff, Schmidt, Bernhardt, Dierksmeier, & Banse, 2011). At present, the underlying processes of AMPs and SMPs are not well understood and it is unclear to which

extent participants' responses are driven by automatic or controlled proceses, i.e., to which extent the measure is implicit (but see Imhoff & Banse, 2009; Payne et al., 2005; Study 5).

Present Research

The objective of the present study was to develop and validate a test battery combining conceptually different indirect measures for the assessment of PSV. First of all, such a combination of conceptually diverse measures has been successfully applied for the assessment of pedophilic sexual preferences for children as this multimethod approach reduces measurement error due to the diagnostic convergence principle (Banse et al., 2010; Schmidt, Gykiere, Vanhoeck, Mann, & Banse, 2014; Schmidt, Mokros, & Banse, 2013). Additionally, although being related to self-report assessments indirect measures usually predict behavioral variation not accounted for by explicit self-reports (Nosek et al., 2011; specifically for sexual interests see Banse et al., 2010; Schmidt et al., 2013). In constructing the test battery we sought to optimize its capacity to tap into men's PSV. The test battery was developed with the aim to be relevant for future research on PSV as a risk factor for sexual (re)offending. As men commit the vast majority of sexual crimes, the pictorial stimuli used in this study always depicted male violence against women. Obviously, this comes at a cost concerning the interpretation of female participants' data that will be addressed in the discussion section.

To estimate whether indirect measures are indicative of individual differences in PSV it is of great importance to choose a valid criterion for true individual differences in PSV. As argued above, measures of self-reported sexual fantasies and behavior can be problematic if respondents are motivated to conceal their true sexual interests. As there is no viable alternative to self-reported fantasies and behaviour in the current case, we sought to minimize socially desirable responding by including participants in our sample for whom it can be legitimately expected that

they have no interest in denying their PSV: Self-identified proponents of BDSM practices. We therefore advertised for an online study on internet forums dedicated to BDSM activities because visitors of such community forums can be expected to be open about their violence-related sexual fantasies and behaviours – at least in an online survey that is equally anonymous as the respective BDSM community board. That said, we chose an online sampling strategy to further ensure maximally honest responding on the explicit preference scales, as the online character guaranteed high levels of perceived (and actual) anonymity – a factor related to reduced socially desirable responding (Joinson, 1999).

Are there methodological alternatives? It is conceivable to use objective, observable, sadistic behaviors as a criterion. Evidently, this is a non-trivial endeavour, as sexual activities cannot just be observed in either the laboratory or the field. As an indirect approximation, it might be possible to use archival data about sexual sadistic behaviour in convicted sexual offenders who have been diagnosed as sexual sadists. However, even if violent sexual behaviour could be established by forensic evidence, the sadistic motivation can only be inferred. Such clinical inference is prone to measurement error and the reliability of the diagnosis *sexual sadism* has been shown to be unaccetably low (Levenson, 2004). Further complicating this approach, sexually sadistic criminal behaviour may be motivated by PSV but may also be primarily motivated by general antisocial personality characteristics. Finally, individuals who show high PSV but have never committed any sexual crime – and never will – would not be included in the sample, biasing our measures towards overestimating the relation between PSV and violent sexual offending. Consequently, in light of a lack of an ultimate and observable criterion for PSV, the best strategy to validate new measures of sexual interest is to use a multi-method approach and to rely on the convergence of conceptually different indicators of the construct in

question (e.g., Banse et al., 2010; Schmidt, et al., 2014; Schmidt, Mokros, & Banse, 2013) as operationalized by self-identified BDSM-affiliates that openly acknowledge their PSV in an anonymous context where social desirability concerns are minimized.

We expect that the scores of direct, self-report-based and indirect measures of PSV will be positively intercorrelated in a heterogenous sample of participants who exhibit varying degrees of self-declared interest in BDSM and/or engagement in BDSM activities and participants who have no BDSM interest and/or do not engage in BDSM behavior.

Method

Participants

As mentioned above, we sought to increase the variance of PSV by recruiting participants either on specific German online platforms dedicated to BDSM issues or communication within the self-identified BDSM community (e.g, "sm-forum.eu", "forum-sm.de", BDSM groups within the social network platform "StudiVZ" such as "Bittersweet BDSM"), or on platforms not concerned with BDSM (e.g., the partnership platform "flirtforum.de", the group "Date me" within the German social network platform "StudiVZ" or social platforms such as "koeln.de/forum" not solely focussing on partnership issues). The specific platforms were chosen in order to recruit a substantial proportion of participants with as well as without a BDSM affiliation. Potential participants were informed about the intent of the study (testing new methods for the assessment of sexual interest), about the anonymity of participation and, as an incentive, the possibility of winning one out of 20 online vouchers (€10 each) by taking part in a raffle. As the picture stimuli depicted exclusively heterosexual interactions, data of homosexual participants were excluded prior to data inspection (n = 4). Furthermore, the data of one participant who did not indicate his sexual orientation and the data of 8 participants who clearly

did not comply with the instructions (e.g., by rapidly clicking through the tasks) were also excluded. This left a total sample of 107 men and 103 women, ranging in age from 18 to 61 years (M = 30.51, SD = 10.04) who completed the full study. The educational level of the sample was fairly high, 38% had a university degree.

Measures

Indirect measures. The test battery consisted of three indirect measures: an Implicit Association Test (IAT), a semantic variant of the AMP (Sexual Misattribution Procedure; SMP), and a Viewing Time measure (VT). In all paradigms photographic pictures retrieved from the internet served as stimulus material: One half of the images showed men and women in an erotic, consensual context, displaying non-pornographic mildly erotic situations (erotic set). The other half depicted violent or coercive scenes (e.g., domestic violence themes), but did not contain any sexually explicit aspects such as nudity or sexual activity or graphic sadistic elements (violent set). The latter images always showed a man exerting violence against a woman with no nudity or other erotic cues involved. As argued above, such stimuli were chosen to optimize the assessment of male sexual interest in sexualized violence because any form of nudity or explicitly sexual material could have been sexually attractive for participants without any PSV. Therefore, if pictures with exclusively violent content are perceived to be associated with sexual excitement (as indicated by the labels of the IAT or the explicit judgment scale of the VT measure/SMP), it is highly likely that this is indicative of PSV.

The preselected pictures were scrutinized by a group of five experts in the field of forensic psychology and the development of indirect measures. In order to be included in the stimulus sets the potential picture had to be rated to be suitable for the given purpose by each expert without any exception. Any concern resulted in the disqualification of the particular picture. The

final set consisted of 40 picture representing violence and 40 pictures representing non-violent erotic interactions.

Implicit Association Test (IAT). In analogy to the procedure introduced by Greenwald et al. (1998), the IAT consisted of five blocks. Participants were asked to assign a total of 20 pictures taken from the two categories violence/coercion and eroticism (10 pictures from each category) to the target concepts "violence" and "non-violence", and to classify a total of 20 words with sexual or non-sexual connotations (10 words each) in terms of the attributes "sexually exciting" (e.g., skintight, orgasm, fondling, seductive, erotic) and "sexually unexciting" (e.g., mediocre, yawning, irrelevant, indifferent, average). Participants assigned the pictures and words appearing consecutively in the middle of the screen by pressing either the right or left key. In the first block combining attribute and target categories (Block 3), "non-violence" and "sexually exciting" on the one hand and "violence" and "sexually unexciting" on the other hand shared the same key, thus constituting compatible combinations for participants with a preference for consensual sexuality. In the second combined block (Block 5), the position of the target concepts was reversed, hence forming compatible matches with the attributes in case of participants holding PSV. Error messages were displayed after incorrect responses and these trials were discarded.

Response times over 10,000 ms (0.1% of the responses) and latencies for incorrect classifications (8.1% of the responses) were excluded from the analysis. Additionally, IAT data of participants with an error rate of more than 30% (i.e., > 3 *SD* above the mean; 0.5% of participants) were eliminated from the analyses. As an individual measure of the association strength between sexual excitement and violence, a *d*-score was calculated by subtracting the mean latency from Block 5 from the mean latency in Block 3, divided by the pooled standard

deviation of the latencies as suggested by Greenwald, Nosek, and Banaji (2003). Thus, high *d*-scores indicated greater relative PSV over sexuality without violent elements.

Sexual Misattribution Procedure (SMP). The sexual SMP (Imhoff et al., 2011) consisted of 160 trials, in which each of the complete 80 pictures (40 of each stimulus category) was shown twice as a prime. Each prime (75 ms) was followed by a blank screen (125 ms) and subsequently a Chinese ideograph which was replaced by a black and white mask after 750 ms. Participants had to rate the Chinese ideograph as either having a sexual meaning or not by pressing the respective response key. Participants were instructed to concentrate only on the Chinese ideograph and to ignore the previously shown prime picture. After the participant's rating, which was not subjected to any time restriction, the masking disappeared and the next trial started immediately. The SMP data of participants who indicated any knowledge of the Chinese language (11 participants) were excluded from the analysis.

Viewing time (VT). Participants were asked to rate 40 pictures from each of the two stimulus categories on a 5-point Likert scale (from 1 "not sexually arousing" to 5 "sexually arousing"). While these explicit ratings comprised a direct measure, the unobtrusively recorded response latency served as an indirect indicator of sexual interest. In line with standard procedures (e.g., Banse et al., 2010) individual response latencies were truncated at 10,000 ms (i.e., longer latencies were recoded to 10,000 ms, affecting 2.7% of the responses). Suspiciously short response latencies could not be detected (all latencies $\geq$ 1249 ms).

Direct measures.

Violent Sexual Interest Questionnaire (VSIQ). Items were generated according to a 2 x 4 factorial design with the factor sexual activity divided into fantasy versus actual behavior and the factor sexual interest represented by four specific sexual interest domains: non-consensual

sadism, consensual sadism, masochism and consensual sexuality without any SM-elements. For each sexual content five sexual situations were selected. For each situation participants were asked to indicate in a dichotomous yes/no response format whether they have performed the described behavior or fantasized about it, ending up with a total of 40 items (see Table 1 for full wording).

Viewing time rating. The explicit judgement of the sexual arousal of the depicted scenes within the Viewing Time paradigm was interpreted as a direct measure of sexual interest.

Procedure

Ethical approval for the present study was granted by the interdisciplinary departmental ethics committee. Participants were fully informed about the intent of the study (i.e., the development of new measurement procedures to assess sexual interests), the approximate duration (30 to 40 min.), that data were collected granting full anonymity, the minimum age for participation of 18 years, and the raffle. The assessment of demographic variables (sex, age, education level, sexual orientation) was followed by the SMP, the IAT, the VSIQ and the VT. The number of demographic information to be revealed was intentionally kept at a minimum in order to maximize participants' perceived anonymity and, thus, reduce social desirability concerns. As we were interested in effects between participants (i.e., construct validity in terms of the association of self-reported and indirectly assessed PSV) and not between experimental conditions the order of procedures and stimuli within these procedures was kept constant to optimize the assessment of individual differences. At the end, participants were asked to rate their subjective feeling of belonging to the BDSM-scene on a 5-point Likert scale (with 1 for *no sense of belonging at all* and 5 for *strong sense of belonging*) and to indicate whether they have

been victims of sexual abuse. Finally, participants were thanked for participation and invited to provide their email-address for participation in the raffle.

Results

The analysis of the internal consistencies (Cronbach's α) of both the indirect and direct measures provided at least satisfactory results, even when gender difference effects were excluded by separately calculating reliability coefficients men and women (see Table 3, last column for men and bottom row for women). The only exception was self-reported consensual sexual behavior for women (VSIQ eroticism α = .30). For the purpose of conceptual comparability between the different measures, difference scores comparable to the IAT *d*-score were also calculated for the VT, the SMP, and the VSIQ (as the difference score of non-consensual sadistic fantasy and consensual sexual fantasy indicating a relative preference for non-consensual sadistic over consensual non-violent fantasy), providing information about the relative preference of violent sexuality over sexuality without violent elements.

Explicit Sexual Interest

The majority of the male participants (66%) declared some degree of affiliation to the BDSM-scene. We used a one-item five-point Likert scale to differentiate between participants with no sense of belonging (as indicated by a 1) and at least some sense of belonging (indicated by a 2 or higher) as an indicator of BDSM affiliation in following analyses. Similarly, in the VSIQ the majority of the male sample indicated some kind of interest in sadistic (consensual, non-consensual) or masochistic sexual activities by endorsing at least one item with a sadistic or masochistic content (86% fantasy, 81% behavior). More specifically, 33% of the male participants indicated fantasizing about non-consensual violence (19% actual behavior), 76% about consensual sadism (65% behavior), and 71% about consensual masochism (65%

behavior). Virtually all participants (99%) reported erotic fantasies without sadistic or masochistic elements (65% behavior).

Among the female participants, 64% declared some sense of belonging to the BDSM-scene and the vast majority agreed on at least one item with sadistic (consensual or non-consensual) or masochistic content in the VSIQ (83% fantasy, 75% behavior). In addition to fantasies about consensual sex without BDSM elements (98%; 73% behavior), masochistic fantasies and behaviors turned out to be the most prevalent ones (79% fantasy, 73% behavior), followed by consensual sadism (52% fantasy, 45% behavior), and finally non-consensual sadism (17% fantasy, 9% behavior).

As a cognitive association between sex and violence might not only result from a preference but also from experience (e.g., as a victim of sexually violent attacks) we also asked participants about such experiences. About 13% of the whole sample indicated having been a victim of sexual abuse themselves and women were affected by sexual victimization about four times more frequently than men (21% vs. 5%; $\chi^2 = 13.04$; $df = 1$; $p < .001$; $w = 0.25$). More important for the current research, victim status was neither related to the participants' affiliation with the BDSM community nor to the existence of sadomasochistic interests as indicated in the VSIQ. Furthermore, the difference scores of the indirect measures and victim status turned out to be unrelated. Victim status will thus not be discussed in the remainder of the manuscript.

Group Differences

Demographically, BDSM-affiliated participants and those indicating no affiliation to the scene differed in terms of age, the former group being older than the latter (mean age: 32.78 vs. 26.03 years; $t(195.21) = -5.50$, $p < .001$, $d = -.80$). Age was included as a control variable in the central analyses reported below but was no significant predictor of violent behaviour or fantasies

and did not alter the reported results; it will thus not be further discussed. As expected, the two groups differed in the expected direction on all explicit measures (Table 2). Sadistic and masochistic interests were more often reported by the BDSM affiliates than by the other group and sexual interest without any sadistic or masochistic elements was more common for those participants not belonging to the scene.

The indirect measures revealed that BDSM affiliates showed stronger automatic associations of violence and sex in the IAT. For the absolute measures, BDSM affiliates showed longer latencies for the violent images (VT) and a higher frequency of assuming a sexual meaning of Chinese ideographs after being primed with violence primes (SMP) than non-affiliates. The two groups did not differ in their reaction to non-violent erotic stimuli (Table 2). Men and women did not differ regarding demographic variables such as age, and educational level. However, the analyses revealed group differences between men and women with respect to specific BDSM interests (see Table 2). While male participants reported more non-consensual as well as more consensual sadistic fantasies, women scored significantly higher in masochistic fantasies. No significant differences between men and women were found in regard to the explicit VT ratings and the mean latencies and difference scores in the indirect tasks.

Male Sample

According to the main purpose of the study to develop an assessment tool for male PSV, the data of the male sample will be reported first. The intercorrelation of the VSIQ scales showed that sexual interest in consensual sadism was related to consensual masochism as well as non-consensual sadism, whereas the latter two were unrelated (Table 3). Corroborating the validity of our stimulus material, both forms of sadistic interest were related to ratings of *violence* stimuli as more sexually arousing and *erotic* stimuli as less arousing in the VT task. Importantly, the VT

latency differences (longer latencies for *violent* compared to *erotic* stimuli) as an indirect measure were also indicative of sadistic (but not masochistic) sexual interest in men. However, VT latency differences did not differentiate between consensual and non-consensual forms of sadism.

An almost identical pattern emerged for the IAT, except that it was also significantly related to masochistic interest. As the test battery aimed to assess sexual interest in committing (vs. being exposed to) sexual violence, this correlation was further explored. Control analyses revealed that these significant correlations simply reflected the co-occurrence of (consensual) sadistic and masochistic interests (62% of the male participants), and became non-significant after controlling for the influence of consensual sadism via partial correlations ($r = .15$, $p = .13$ for fantasies, and $r = .13$, $p = .19$ for behavior). Only the SMP showed a specific correlation pattern with non-consensual vs. consensual sadism. Particularly, participants with sexual interest in non-consensual sadism evaluated Chinese ideographs as more sex-related after *violent* primes. In terms of convergence of the three indirect measures, the IAT score was related to both other difference scores (Table 3).

The zero-order correlations reported above indicated preliminary support for the validity of our indirect measures. With regard to our main validity criterion, the endorsement of non-consensual sadistic preferences, we conducted multivariate hierarchical regression analyses to investigate whether the conceptually different indirect measures showed incremental validity (Table 4). The three indirect measures (difference scores) were entered in two separate hierarchical regression analyses with non-consensual fantasies and behaviors as respective criterion behavior. For both scales incremental validity could be shown. In case of the fantasy scale the VT difference score alone (Step 1) was able to predict the criterion variable to a

significant degree ($R^2 = .10$, $p < .001$). The addition of the IAT in Step 2 resulted in a substantial increase of variance being accounted for ($R^2 = .18$, $p < .01$), as well as the addition of the SMP in Step 3, bringing the total proportion of explained variance to $R^2 = .22$, $p < .05$. Importantly, each of the measures explained unique parts of the criterion variance, corroborating the usefulness of the multi-method approach.

In case of the VSIQ behavior scale incremental validity could be shown as well but the VT did not tap into unique variance, explaining 3% of the variance in non-consensual behaviors. Adding the IAT score as a predictor increased the explained variance by a significant 6%. Further adding the SMP score as a predictor significantly increased the total amount of explained variance to 16%. However, in the final Step 3, neither the VT nor the IAT accounted for a unique part of the variance while the SMP was a highly significant predictor.

Female Sample

The correlative pattern of the direct measures (VSIQ) mirrored that of the male sample, as behavior and fantasies of each sexual interest category were highly correlated, and consensual sadism was related to masochism as well as non-consensual sadism, but the latter two were unrelated (Table 3). Likewise, the correlation between the three indirect measures converged to a degree comparable to the male sample. However, the relation between direct and indirect measures differed meaningfully, as the indirect measures seemed to reflect masochistic rather than sadistic interest in the female sample. Women's explicitly stated interest in masochism was consistently mirrored in the VT and IAT measures of PSV, however, in the SMP to a minor degree. As the picture stimuli depicted women exclusively in the role of victims, this finding suggests that the indirect measures tapped into a sexual interest in the depicted activity

(masochistic for women, sadistic for men) rather than the abstract concept of violent sexuality per se.

In light of these findings, hierarchical regression analyses were computed in analogy to the ones reported for the male sample but with sexual masochism (VSIQ fantasy and behavior scales) as the criterion. Masochistic fantasies and behavior were both significantly predicted by the VT difference score and the IAT added incremental variance in both cases (Table 5). In contrast to the results for males' non-consensual sadism, the SMP did not show incremental validity.

Discussion

The main aim of the study was to test the psychometric properties of an indirect assessment tool developed for the purpose of measuring PSV. More than 200 participants completed a study with three indirect measures and a sexual interest questionnaire. Importantly, a substantial proportion of participants reported an interest in non-consensual sexual activities. Results revealed that men's non-consensual sexual interest could be predicted by all three indirect measures of PSV, whereas for women the indirect measures better reflected masochistic sexual interest.

Stimulus Material

One straightforward explanation for this gender difference could be based on the stimuli used. As all *violent* stimuli showed men as perpetrators and women as targets of violence, the indirect measures might reflect identification with the depicted scenes. This could lead to an artefact whereby masochistic (but not sadistic) women can identify with the depicted females and the opposite was true for men. Particularly for the IAT, this finding seems somewhat surprising as IAT effects are commonly attributed to the association of the two abstract concepts

reflected by the category labels and relatively independent of specific stimulus characteristics of the items representing these categories (De Houwer, 2001; but see Blümke & Friese, 2006).

An alternative explanation might be based on the theoretical assumption that automatic interest in PSV translates into different behaviors for men and women: Whereas women with a PSV predominantly engage in masochistic activities, men tend to take a sadistic role. However, the notion of early theorists that masochism is, to some extend, inherent in women, has been discarded in favour of the assumption that there is no link between masochism and gender (Bleslow, Evans, & Langley, 1985; Baumeister & Butler, 1997; Dawson, Bannermann, & Lalumière, 2014; Donnelly & Fraser, 1998; but see Ogas & Gaddam, 2012), although this gender difference was shown in the explicit scales in our study.

Another detail of our stimuli might also invite some criticism. We had deliberately chosen stimuli for the violent category that displayed only "light" variants of violence/aggressive domination and little to none sexual content (e.g., akin to pictures of domestic violence). While it might be argued that such scenes are not valid examples of sexually sadistic fantasies, we would argue that this actually speaks for and not against our approach. Using scenes of non-sexual everyday violence should raise the threshold for sexual associations. That means that individuals who actually do associate these images with sexuality despite their clearly non-sexual content must be more prone to sexual violence.

Specificity

All three indirect measures of PSV correlated independently with non-consensual sadistic interest. However, only the SMP showed specificity regarding the differentiation between preferences for non-consensual and consensual sexual violence. Whereas IAT and VT correlated comparably high with non-consensual and consensual sadistic interest, the SMP was associated

only with non-consensual sadism. A potential explanation for this dissociation lies in the presumed underlying processes. Whereas the IAT relies on response interference effects (Gawronski et al., 2011), and the VT scores reflect task scrutinity (Imhoff et al., 2012), the processes underlying SMP effects are presently not well understood. It is conceivable that compared to the other two measures, SMP responses are relatively more controlled and explicit. Thus, consciously evaluating Chinese ideographs as sex-relevant after *violent* primes could reflect a tendency to willingly and boldly endorse an association between sex and violence. Such a response tendency could reflect a decision to voluntarily violate social desirability standards, as is also prevalent in the decision to force sex on someone against their will. Ironically, one of the major drawbacks of the SMP (the unclear implicitness of the task) could thus prove an asset for diagnostic purposes of differentiating consensual and non-consensual PSV. This explanation can also account for the fact that the SMP was unrelated to women's masochistic interest.

Consensual vs. non-consensual Sadism

There was an only moderate correlation between self-reported consensual and non-consensual sadistic interest. This might be attributable to the recruitment of BDSM affiliates who are members of a subculture that explicitly endorses this differentiation. However, more research is needed in order to clarify whether the development of a preference for consensual sexual violence results from the same underlying conditions and psychological processes as the development of a preference for non-consensual sexual activities with possibly the former representing genuine sexual interest whereas the latter simply reflecting a by-product of general antisociality.

Towards an applied perspective

The goal of the present study was the development and validation of a multi-method indirect test battery for PSV. This laid the foundation for future research exploring the prevalence and role of PSV in sexual offending. Thus, as a next step the instrument should be validated with sadistic sexual offenders. In particular, this instrument could prove extremely helpful in the forensic context if it were sensitive for sadistic tendencies of offenders attracted by paraphilic rape (Harris, Lalumière, Seto, Rice, & Chaplin, 2012; Thornton, 2010) or violent sexual sadism (Kingston et al., 2010). For the purposes of intervention and offender management it would be important to discover such a development at an early stage. It is, however, conceivable that such criminal acts are not exclusively borne out of PSV but more attributable to antisocial personality characteristics. To address this open empirical question, solid measures of PSV are a necessary prerequisite. Importantly, this would not invalidate the usefulness of the test battery described here but would point to the direction of less forensically relevant questions of the relation between sex and violence. While there exists a common notion of a sex-aggression link (Mussweiler & Förster, 2000), recent research has raised the issue of individual differences in such a link (Imhoff, Bergmann, Schmidt, & Banse, 2013). The assessment methods introduced here may further elucidate the general question of who associates sex with aggression and whether these associations have relevant impact on actual behavior. Importantly, the current study strongly suggests that the introduced test battery is highly conducive to further elucidate these important questions in future empirical studies.

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Table 1 *Items of the Violent Sexual Interest Questionnaire (VSIQ)*

	Fantasy ***It sexually arouses me to fantasize about…***	**Behavior** ***I was sexually aroused while…***
Non-consensual sadism	… inflicting pain on a person against her/his will.	… inflicting pain on a person against her/his will.
	… tying up a person during sexual intercourse against her/his will.	… tying up a person during sexual intercourse against her/his will.
	… humiliating a person against her/his will.	… humiliating a person against her/his will.
	… torturing a person against her/his will.	… torturing a person against her/his will.
	… beating a person during sexual intercourse against her/his will.	… beating a person during sexual intercourse against her/his will.
Consensual sadism	… torturing a consenting person.	… torturing a consenting person.
	… tying up a consenting person during sexual intercourse.	… tying up a consenting person during sexual intercourse.
	… beating a consenting person during sexual intercourse.	… beating a consenting person during sexual intercourse.
	… humiliating a consenting person.	… humiliating a consenting person.
	… inflicting pain on a consenting person.	… inflicting pain on a consenting person.
Masochism	… being humiliated by a person on my own demand.	… being humiliated by a person on my own demand.
	…being tortured by a person on my own demand.	… being tortured by a person on my own demand.
	… being beaten by a person during sexual intercourse on my own demand.	… being beaten by a person during sexual intercourse on my own demand.
	… being inflicted pain on by a person on my own demand.	… being inflicted pain on by a person on my own demand.
	… being tied up by a person during sexual intercourse on my own demand.	… being tied up by a person during sexual intercourse on my own demand.
Eroticism (mutual consent)	… a person and me having consensual sexual intercourse with each other.	… having consensual sexual intercourse with a person.
	… a person and me French kissing each other.	… a person and I were French kissing each other.
	… a person and me sexually caressing each other.	… a person and I were sexually caressing each other.
	… a person and me satisfying each other manually.	… a person and I were satisfying each other manually.
	… a person letting me look at her/his naked upper part of the body.	… a person let me look at her/his naked upper part of the body.

Table 2
Means, standard deviations and group differences of direct and indirect measures for men and women and for participants relating and not relating to BDSM

	BDSM (n = 134)		No BDSM (n = 72)		BDSM vs. no BDSM			Men (n = 107)		Women (n = 103)		Men vs.Women		
	M	*SD*	*M*	*SD*	*t*	*df*	*d*	*M*	*SD*	*M*	*SD*	*t*	*df*	*d*
VSIQ Non-cons. Sadism (fantasy)	0.19	0.33	0.04	0.13	-4.68**	192.51	-0.68	0.19	0.33	0.09	0.23	2.66*	189.64	0.37
VSIQ Non-cons. Sadism (behavior)	0.11	0.26	0.01	0.10	-3.64**	186.78	-0.53	0.11	0.27	0.04	0.16	2.38*	173.77	0.33
VSIQ Cons. Sadism (fantasy)	0.60	0.43	0.13	0.20	-10.53**	200.39	-1.54	0.54	0.43	0.34	0.41	3.54**	207.90	0.49
VSIQ Cons. Sadism (behavior)	0.54	0.45	0.09	0.16	-10.71**	182.91	-1.57	0.48	0.44	0.30	0.41	3.02**	207.56	0.42
VSIQ Masochism (fantasy)	0.76	0.34	0.13	0.16	-17.97**	201.28	-2.63	0.47	0.42	0.61	0.42	-2.36*	208	-0.33
VSIQ Masochism (behavior)	0.73	0.37	0.09	0.16	-17.16**	196.39	-2.51	0.44	0.42	0.57	0.43	-2.29*	208	-0.32
VSIQ Eroticism (fantasy)	0.89	0.23	0.94	0.11	2.33*	200.94	0.34	0.92	0.19	0.90	0.20	< 1	208	0.13
VSIQ Eroticism (behavior)	0.93	0.15	0.94	0.17	< 1	204	0.06	0.93	0.18	0.93	0.12	< 1	208	-0.03
VT Rating Violence	1.11	1.00	0.16	0.24	-10.44**	160.45	-1.53	0.75	0.93	0.83	0.94	< 1	208	-0.08
VT Rating Eroticism	2.26	0.89	2.72	0.72	4.01**	171.64	0.59	2.45	0.85	2.38	0.87	< 1	208	0.08
VT Latency Violence	4425.69	1131.66	3551.53	790.45	-6.47**	190.29	-0.95	4165.08	1155.56	4125.15	1108.64	< 1	208	0.04
VT Latency Eroticism	4001.84	1018.02	4061.01	1072.58	< 1	204	0.06	4115.87	1146.68	3967.07	995.17	1.00	208	0.14
VT diff	423.85	882.96	-509.49	671.84	-7.83**	204	-1.14	49.20	840.22	158.08	1018.64	< 1	208	-0.12
IAT diff	-0.36	0.64	-0.73	0.41	-5.00**	198.46	-0.73	-0.46	0.66	-0.53	0.52	< 1	199.18	0.11
SMP Violence	1.38	0.21	1.27	0.16	-4.48**	186.76	-0.66	1.34	0.23	1.35	0.18	< 1	200.99	-0.04
SMP Eroticism	1.44	0.24	1.37	0.22	-1.94	204	-0.28	1.41	0.25	1.42	0.22	< 1	208	-0.05
SMP diff	-0.05	0.22	-0.10	0.25	-1.53	204	-0.22	-0.07	0.23	-0.07	0.23	< 1	208	0.02

Note. ** $p < .01$, * $p < .05$

Table 3

Correlations and reliabilities of all preference measures regarding the male sample (upper diagonal) and the female sample (lower diagonal)

	1)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)	12)	13)	14)	15)	16)	17)	18)	α
Direct Measures																			
1) VSIQ Non-cons. Sadism (f)		.77	.49	.49	.08	.08	-.03	.07	.87	.67	-.27	.09	-.14	.31	.35	.22	-.02	.25	.89
2) VSIQ Non-cons. Sadism (b)	.70		.37	.41	.10	.13	.09	.12	.61	.59	-.19	-.04	-.17	.18	.27	.28	-.03	.32	.91
3) VSIQ Cons. Sadism (f)	.35	.33		.93	.34	.31	.01	.14	.41	.46	-.22	.32	.04	.39	.28	.07	.06	.00	.93
4) VSIQ Cons. Sadism (b)	.36	.32	.95		.31	.30	.04	.14	.40	.49	-.21	.31	.01	.42	.29	.09	.10	-.02	.94
5) VSIQ Masochism (f)	.16	.02	.30	.33		.93	-.20	-.15	.17	.23	-.20	.10	.01	.12	.22	.12	.06	.06	.91
6) VSIQ Masochism (b)	.17	.03	.35	.39	.94		-.22	-.13	.18	.21	-.19	.16	.05	.16	.21	.12	.06	.05	.91
7) VSIQ Eroticism (f)	.04	.08	.18	.18	-.10	-.16		.67	-.52	-.25	.39	-.14	-.06	-.11	-.01	-.11	-.02	-.09	.78
8) VSIQ Eroticism (b)	.01	.06	.20	.22	-.09	-.10	.81		-.28	-.12	.26	-.04	-.07	.03	.04	-.09	.04	-.13	.74
9) VSIQ Diff	.75	.49	.15	.16	.20	.22	-.64	-.54		.70	-.43	.14	-.09	.32	.30	.25	-.01	.26	n/a
10) VT Rating Violence	.15	.08	.07	.08	.62	.60	-.32	-.31	.33		-.45	.23	-.05	.39	.49	.47	.11	.35	.99
11) VT Rating Eroticism	-.05	.16	-.07	-.06	-.31	-.30	.39	.32	-.30	-.36		-.12	-.13	.01	-.31	-.20	.15	-.37	.98
Indirect Measures																			
12) VT Latency Violence	.08	.09	.16	.19	.39	.37	-.13	-.01	.15	.22	-.09		.73	.37	.22	.02	-.03	.05	.96
13) VT Latency Eroticism	-.10	-.13	-.17	-.19	-.16	-.19	-.02	.07	-.06	-.21	-.07	.54		-.36	.05	-.06	-.13	.08	.96
14) VT diff	.18	.23	.34	.39	.58	.59	-.13	-.08	.22	.44	-.03	.57	-.39		.24	.11	.14	-.04	.82
15) IAT d	.01	-.16	.11	.08	.38	.33	-.13	-.09	.09	.41	-.33	.12	-.06	.20		.21	-.00	.22	.88
16) SMP Violence	.07	.06	.07	.05	.16	.19	.01	.06	.05	.39	-.19	.21	-.11	.33	.24		.55	.39	.96
17) SMP Eroticism	.13	.11	-.03	-.03	.06	.07	.02	.01	.09	.06	.10	-.02	-.18	.15	.02	.36		-.55	.97
18) SMP diff	-.07	-.06	.08	.07	.07	.08	-.02	.04	-.04	.25	-.24	.18	.09	.11	.17	.45	-.67		.87
Cronbach's α	.87	.87	.92	.94	.92	.93	.68	.30	n/a	.98	.98	.96	.95	.87	.84	.93	.95	.86	

Note. Correlations and reliabilities above the diagonal for the male sample (n = 107), below the diagonal for the female sample (n = 103). All correlations $|r| \geq .20$ significant at $p < .05$; all correlations $|r| \geq .26$ significant at $p < .01$

Table 4

Hierarchical regressions for variables predicting a preference for non-consensual sexuality (male sample)

	Non-cons. sadistic sexual fantasy				Non-cons. sadistic sexual behavior			
Predictor	ΔR^2	*B*	*SE*	β	ΔR^2	*B*	*SE*	β
Step 1	.10**				.03†			
Viewing Time (VT)		.11	.03	.31**		.05	.03	.18†
Step 2	.08**				.06*			
VT		.09	.03	.25**		.04	.03	.12
Implicit Association Test (IAT)		.09	.03	.29**		.10	.04	.24*
Step 3	.04*				.08**			
VT		.10	.03	.27**		.05	.03	.15
IAT		.07	.03	.24*		.07	.04	.18†
Semantic Misattribution Procedure (SMP)		.07	.03	.21*		.08	.03	.28**

Note. Variables represent the z-standardized difference scores of the measures; ** $p < .01$; * $p < .05$; † $p < .10$

Table 5

Hierarchical regressions for variables predicting a preference for sexual masochism (female sample)

	Masochistic sexual fantasy				Masochistic sexual behavior			
Predictor	ΔR^2	*B*	*SE*	β	ΔR^2	*B*	*SE*	*β*
Step 1	.34**				.35**			
Viewing Time (VT)		.22	.03	.58**		.24	.03	.59**
Step 2	.08**				.06**			
VT		.20	.03	.53**		.22	.03	.55**
Implicit Association Test (IAT)		.14	.04	.28**		.12	.04	.24**
Step 3	.00				.00			
VT		.20	.03	.53**		.22	.03	.55**
IAT		.14	.04	.30**		.13	.04	.25**
Semantic Misattribution Procedure (SMP)		-.03	.03	-.06		-.02	.04	-.05

Note. Variables represent the z-standardized difference scores of the measures; ** $p < .01$; * $p < .05$