SEXUAL DEVIANCE, ANTISOCIALITY, MATING EFFORT, AND THE USE OF SEXUALLY COERCIVE BEHAVIORS

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Summary—Three high-order risk factors have been associated with a sexually coercive history in males: sexual deviance, antisociality, and mating effort. Ninety-nine young men were administered questionnaires to assess antisociality, and mating effort and 30 of them underwent a phallometric assessment of sexual deviance. Variables indexing antisociality, in particular psychopathy, were related to mating effort and self-reported sexual coercion. Variables indexing mating effort were also related to sexual coercion but those measuring sexual deviance were not. The strongest risk indicators for sexual coercion were psychopathy (as assessed by an early history of behavior problems), sensation-seeking, self-perceived mating success, and an extensive history of uncommitted sexual relationships.

INTRODUCTION

Research has identified three main factors to explain sexual coercion among officially identified and self-identified coercive males. First, a substantial proportion of hospitalized or incarcerated rapists show deviant sexual preferences in the laboratory. Sexual preferences involving coercion are measured in the laboratory by changes in penile tumescence elicited by audiotaped scenarios describing non-sexual assault, consenting sex, and rape. Recent meta-analyses have shown that institutional samples of rapists, as a group, exhibit deviant patterns of sexual preferences in phallometric assessment (Hall, Shondrick & Hirschman, 1993; Lalumiere & Quinsey, 1993, 1994). No other variable has shown a comparable degree of discriminant validity. Indices of deviant sexual preferences have also been found to predict future sexual offending among rapists (Quinsey, Lalumière, Rice & Harris, 1995a; Quinsey, Rice & Harris, 1995b; Rice, Harris & Quinsey, 1990).

In contrast to institutional samples, the sexual preferences of self-identified sexually coercive men have rarely been investigated. In one study, college men who admitted past use of non-physical or physical sexual coercion showed larger relative penile responses when reading standardized scenarios of rape than their non-coercive peers (Malamuth, 1986).

The second factor concerns antisocial and hostile tendencies. Incarcerated rapists, compared to non-offenders, have been found to be more antisocial and hostile (Armentrout & Hauer, 1978; Langevin, Paitich & Russon, 1985; Quinsey, Arnold & Pruesse, 1980; Raider, 1977), and less empathic (Rice, Chaplin, Harris & Coutts, 1994; Seto & Barbaree, 1993); they have more favourable perceptions of rape (Field, 1978) and more conservative attitudes towards women and sexuality (Scott & Tetreault, 1987). However, these differences usually disappear when rapists are compared with other offenders. 'Antisociality' in this context most likely involves a general antisocial tendency rather than a specific tendency in the sexual domain. Noteworthily, psychopathy, as measured by Hare's Psychopathy Checklist-Revised (PCL-R; Hare, 1992) predicts sexual reoffending among institutionalized rapists (Quinsey et al., 1995a; Quinsey et al., 1995b).

Antisocial risk factors have been extensively studied among self-identified coercive men recruited from among undergraduates. Coercive males, compared with their non-coercive peers, have been found to have a stronger aggressive drive (Greendlinger & Byrne, 1987; So-Kum Tang, Critelli & Porter, 1993), to be more authoritarian (Walker, Kow & Quinsey, 1993) and less empathic (Lisak & Ivan, 1995), to show more hostile masculinity (Koss & Dinero, 1988; Muehlenhard & Linton, 1987; Malamuth, Heavy & Linz, 1993; Spence, Losoff & Robbins, 1991; Walker et al., 1993), to be...
more domineering in laboratory interactions with women (Malamuth & Thornhill, 1994), and to be more antisocial and more involved in delinquency (Petty & Dawson, 1989; Rapaport & Burkhart, 1984; Sarwer, Kalichman, Jonhson, Early & Akram Ali, 1993; but see Koss, Leonard, Beezley & Oris, 1985).

The third factor, mating effort, has only directly been investigated in our laboratory (Lalumière, Chalmers, Quinsey & Seto, submitted (a)). Mating effort refers to energy expenditure allocated to locating, courting, and sexually interacting with individuals of the preferred sex and age. It can be distinguished from parental investment where energy is allocated to the care and protection of offspring and mates. Elsewhere we have argued that the male sexual psychology has been designed by natural selection “to maximize reproductive success by varying the proportion of mating effort and parental investment expended according to circumstances” (Quinsey & Lalumière, 1995). In our previous work we found that young adult men have a tendency to adjust mating effort according to their success in attracting opposite-sex partners. More successful young men are more likely to pursue a short-term, uncommitted approach to mating and those less successful are more likely to pursue a long-term, committed approach, while the reverse seems to be true among women (Lalumière et al., submitted (a); Lalumière, Seto & Quinsey, submitted (b); Landolt, Lalumière & Quinsey, 1995).

Very little is known about variables indexing mating effort among officially identified rapists. In contrast, self-identified sexually coercive men have been compared to non-coercive men on a number of mating effort variables. Self-identified sexually coercive men have been found to have had more sexual experience (Byers & Eno, 1991; Gold & Clegg, 1990; Kanin, 1985; Koss & Diner, 1988; Koss et al., 1985; Lalumière et al., submitted (a); Mahoney, Shively & Traw, 1986), to have a greater preference for partner variety, uncommitted sex, and less intimate relationships (Cornett & Shuntich, 1991; Lalumière et al., submitted (a); Sarwer et al., 1993), to desire a greater amount of sexual activity (Kanin, 1983; 1985; but see So-Kum Tang et al., 1993), and to be more likely to view dating in terms of sexual possibilities (Craig, Kalichman & Pollingradt, 1989).

Self-reported sexually coercive men have thus adopted an uncommitted approach to mating. Their aggressive approach seems to be supported by perceptual and cognitive biases: uncommitted and aggressive men are more likely to infer sexual interest in women (Craig Shea, 1993); are more likely to interpret hostile rejection as containing elements of seduction (Malamuth & Brown, 1994), have more difficulty reading female negative cues (Lipton, McDonel & McFall, 1987; McDonel & McFall, 1991), and are more likely to attribute sexual desire to a rape victim and less likely to perceive aggressive sexual scenarios as rape (Jenkins & Dambrot, 1987).

Sexually coercive men have also been found to use different tactics to attract mates and to be more ‘macho’ (Gold, Fultz, Burke, Prisco & Willett, 1992; Lalumière, et al., submitted (a)), to fantasize more about coercive sex or sex in general (Gold & Clegg, 1990; Greendlinger & Byrne, 1987), and to report greater likelihood of using sexual coercion in the future (Lalumière et al., submitted (a); Malamuth, 1981; but see Greendlinger & Byrne, 1987).

There are indications that these three factors—sexual deviance, antisociality and mating effort—are independently related to sexual coercion, although some studies report significant intercorrelations and interactions: Seto, Khattar, Lalumière and Quinsey (submitted) and Seto, Lalumière and Quinsey (1995) found that men with an uncommitted approach to mating scored higher on psychopathy (as assessed by an early history of behavior problems) and sensation seeking. Malamuth et al. (1993) reported that their factors ‘sexual promiscuity’ and ‘hostile masculinity’ independently contributed to self-reported sexual coercion among young males. Using the same sample, Malamuth (1986) reported that sexual arousal to rape was significantly correlated with hostility towards women but not with acceptance of interpersonal violence against women or sexual experience. Mahoney et al. (1986) found that number of sexual partners and a macho personality were independently associated with self-reported sexual coercion. Rice and Harris (1994) reported that the interaction of sexual deviance and psychopathy predicted sexual recidivism among incarcerated rapists. Serin, Malcolm, Khanna and Barbaree (1994) and Quinsey et al., (submitted b) obtained correlations of 0.28 and 0.20, respectively, between psychopathy (PCL-R) and sexual deviance using mixed samples of rapists and child molesters. Malamuth and Check (1980, 1983) reported positive but non-significant correlations between sexual arousal to rape and self-reported likelihood to engage in sexual coercion in the future. The intercorrelations of sexual deviance, antisociality and mating effort were further investigated in this study.
The base rate of self-reported coercion is usually high enough to permit multivariate analyses with a moderate sample size. At least 5% of college men report having used coercive tactics that would be considered rape in most jurisdictions. Another 25% report coercive tactics varying from persistent verbal pressuring to threats of physical harm. These base rates have been obtained at our university (Lalumière et al., submitted (a); Walker et al., 1993), at different North American university campuses (e.g. Koss, Gidycz & Wisniewski, 1987), and in non-American countries (e.g. Gavey, 1991; So-Kum Tang et al., 1993).

We predicted that indicators of the three high-level factors are related to self-reported sexual coercion. We also investigated the contribution of three variables empirically associated with mating effort: sensation seeking (Seto et al., 1995); self-perceived mating success; and self-esteem (Lalumière et al., submitted (b)). We predicted that mating effort, because it involves a lack of compromise with the preferred female strategy of long-term, committed relationships (Lalumière et al., submitted (b), Landolt et al., 1995), is correlated with antisocial and hostile tendencies. No predictions were made concerning the correlations between sexual deviance and the other two main factors.

We also investigated whether physiological habituation to sexual stimuli is associated with self-reported mating effort. Penile habituation is commonly obtained when men are repeatedly exposed to the same sexual stimuli in the laboratory (O’Donohue & Geer, 1985; O’Donohue & Plaud, 1991) but not when the stimuli vary over sessions (Julien & Over, 1984; O’Donohue & Geer, 1985; Rosen, 1973). Individual differences in habituation as a function of sexual history have not, to our knowledge, been investigated before. We predicted that men with a history of short-term, uncommitted sexual encounters would show a stronger habituation to a stimulus presented repeatedly than men without such a history.

**METHOD PART ONE**

**Participants**

Ninety-nine adult heterosexual men ranging from 18 to 32 years of age ($X = 23.0$, $Md = 22$, s.d. = 2.6) were recruited from the Queen’s student community and the non-student community using advertisements placed in local newspapers and employment centres. Participants were paid $10 for their participation. Socioeconomic status was assessed using the Blishen Index, an indicator of socioeconomic status based on the median income and education of different occupations in the 1981 Canadian Census (Blishen, Carroll & Moore, 1987). The average maximum score of the participants or either of their parents was 60.32 ($Md = 61.80$, s.d. = 15.34); these values correspond to occupations such as public school teacher or mid-level manager.

Eighty-two per cent of participants had never been married and 70% reported some university education. All participants but two reported themselves to be predominantly heterosexual on a modified Kinsey scale (Kinsey, Pomeroy & Martin, 1948) and none reported themselves to be predominantly homosexual.

**Measures**

**Mating effort.** The Sexual Experience scale (Lalumière et al., submitted (a)) contains five items (age at first intercourse, number of partners since puberty, number of partners in the last year, percentage of sexual relationships that were casual, and number of one-night stands). Item scores were standardized within subjects (first item reversed-coded) and averaged ($\alpha = 0.77$).

The Preference for Partner Variety and Casual Sex scale (Lalumière et al., submitted (a)) contains 11 items measuring an interest for committed vs uncommitted sexuality (e.g. “I prefer short-term sexual relationships”; “I prefer a long-term relationship with one partner”). Items were coded in the same direction (greater preference for partner variety) and item scores were standardized within subjects and averaged ($\alpha = 0.88$).

An adapted version of Buss’s (1988) list of tactics of mate attraction was used to assess participants’ use of mating tactics. The questionnaire contains 10 tactics found to be frequently used and rated by both sexes as most effective in attracting a female mate (e.g. “Show sympathy to a female’s troubles”), and 10 tactics found to be frequently used and rated as less effective (e.g. “Flash
a lot of money to impress a female”). Mean scores were created within subjects for both types of tactic (alphas = 0.67).

The Sociosexuality Inventory contains seven items (Simpson & Gangestad, 1991) measuring a propensity, both in terms of interests and past behaviors, for restricted vs unrestricted sexuality (degree of love and commitment necessary for engaging in sex; e.g. “I can imagine myself being comfortable and enjoying casual sex with different partners”). It contains two items from the Sexual Experience scale and five items from the Preference for Partner Variety and Casual Sex scale. A total score using the seven items was computed employing Simpson and Gangstad’s (1991) weighting formula and their proposed maximum score restrictions (alpha = 0.71). This inventory has good reliability, and good convergent and discriminant validity. Higher scores indicate less restricted sexuality.

Antisocial and hostile tendencies. The Childhood and Adolescent Psychopathy Taxon scale (Harris, Rice & Quinsey, 1994, Seto et al., submitted) contains eight items related to early behavior problems (arrest before age 16, not having lived with natural parents until age 16, fighting, DSM-III conduct disorder, elementary school problem, school suspensions, teenage alcohol abuse, parental alcohol abuse). Using a non-student sample, this self-report measure was found to correlate 0.87 with an interview measure of these same predictors, and 0.72 with an interview measure of adult personality indicators of psychopathy (Seto et al., submitted). Items are coded as 0, 1, or 2 with possible total scores from 0 to 16 (alpha = 0.62). Higher scores indicate a more problematic history.

The Levenson, Kiehl and Fitzpatrick (1995) Psychopathy scale is a 26-item scale developed using a non-forensic population. It contains two factors (primary and secondary psychopathy) and correlates with self-report of antisocial acts, disinhibition, and boredom susceptibility (e.g. “For me, what’s right is whatever I can get away with”; “Cheating is not justified because it is unfair to others”). Items were coded in the same direction (indicating more psychopathy) and average scores were computed within subjects for each subscale (alpha = 0.88 and 0.71, respectively) and for the whole scale (0.87).

The Adversarial Sexual Beliefs, Acceptance of Interpersonal Violence, Rape Myth Acceptance (Burt, 1983), and the Hostility Toward Women (Check & Malamuth, 1983) scales contain items related to attitudes toward women and sex. Items were coded in the same direction and average scores were obtained for each scale (alphas ranging from 0.55 to 0.82). A total score (‘Hostility’) using scale scores was also obtained by standardizing and summing each scale score within participants; a base 10 logarithm transformation was then used to normalize the distribution of scores. Higher scores indicate more negative and hostile attitudes.

Variables empirically related to mating effort. The Sensation Seeking Scale (Zuckerman, 1979) is a 40-item, forced choice questionnaire with four subscales: Thrill and Adventure Seeking, Experience Seeking, Disinhibition, and Boredom Susceptibility. Zuckerman (1979) summarized data from a series of studies showing that the internal reliability of the total scale is good, ranging from 0.83 to 0.86. The test–retest reliability is 0.89 over three weeks and 0.75 over six to eight months. The construct validity also appears to be good, based on the relationships between sensation seeking and activities such as reckless driving and alcohol or drug abuse. Items were coded in the same direction (indicating more sensation seeking) and summed for each subscale and the whole scale (alpha = 0.80). Higher scores indicate higher sensation seeking.

The modified Self-Perceived Mating Success scale (Lalumière et al., submitted) has 10 items answered on a seven-point scale ranging from 1 (disagree) to 7 (agree). It describes self-assessed success in attracting potential partners, and physical and personal attractiveness (e.g. “Members of the opposite sex notice me”; “Relative to my peer group I consider myself more attractive”). Items were coded in the same direction (higher perceived success) and scores were summed (alpha = 0.87).

The Self-Esteem scale (Rosenberg, 1979) comprises 10-items answered on a four-point scale, ranging from strongly disagree to strongly agree (e.g. “On the whole, I am satisfied with myself”; “I feel I do not have much to be proud of”). It has satisfactory reliability and validity and is positively related to sexual history items such as number of sexual partners since puberty among males. Items were coded in the same direction (higher self-esteem) and scores were averaged within subjects (alpha = 0.87).

Sexual coercion. A modified version of the Sexual Experiences Survey (originally from Koss & Oros, 1982) consists of 12 questions where participants are asked “How many times have you ...”
Sexual deviance, antisociality, and mating effort

(From 0 to 5 or more) combined with a description of a situation involving different levels of non-physical (e.g. "had sexual intercourse with a woman even though she didn’t really want to because she felt pressured by your continual arguments") and physical (e.g. "had sexual intercourse with a woman when she didn’t want to because you used some degree of physical force") sexual coercion. Koss and Gidycz (1985) reported a Cronbach alpha of 0.89 and a one-week test–retest item agreement of 93% on the original yes/no version. Item 2 was not used to classify participants because it was deemed too ambiguous.

An adaptation of Malamuth’s Likelihood of Forced Sex Scale (1981) determined participants’ self-reported propensity to engage in sexual coercion. This scale consists of five situations adapted from the modified Sexual Experience Survey where participants indicated how likely they would be to engage in these behaviors if there were no chance of getting caught and no negative consequences ("not likely" to "very likely" on a seven-point scale). Mean scores were created for likelihood of non-physical coercion (three items; alpha = 0.76) and likelihood of physical coercion (two items; alpha = 0.95). Higher scores indicate higher likelihood.

Social desirability. The Balanced Inventory of Desirable Responding (Paulhus, 1991, p. 37) contains two subscales assessing positive self-deception or self-deceptive enhancement (an “honest but positively biased” tendency) and impression management (“a deliberate self-presentation to an audience”). Paulhus reports a coefficient alpha of 0.83 and a correlation of 0.71 of the total scale with the Marlowe–Crowne Social Desirability Scale. The impression management scale is the more appropriate measure of socially desirable responding to use as a covariate.

Procedure

Participants were tested in groups of two to five. Upon arrival at the laboratory they were given a brief oral description of the procedure and asked to read and sign a consent form. They then completed a demographic questionnaire asking about their age, sex, marital status, education, own and/or parental occupation and sexual orientation.

Participants then completed the questionnaires in one of five random orders. A questionnaire identification number was printed on the first and last page. The last page of the package informed them that we needed participants for a study of physiological sexual arousal; they were instructed to tear off that page if interested and to contact our laboratory using the questionnaire identification number but not their name. The questionnaire took between 30 and 60 minutes to complete. Participants were then thanked and debriefed.

PART TWO

Participants

Thirty participants were recruited for the second part of the study. Their average age was 24.3 (range from 18 to 32; $Md = 23.5$; s.d. = 4.2). The average maximum Blishen score of the participants or either of their parents was 60.80 ($Md = 63.26$, s.d. = 17.40). Seventy per cent of the participants had never been married and 60% reported some university education. All participants reported themselves to be predominantly heterosexual on the modified Kinsey scale. These 30 participants did not differ from the 69 who did not volunteer on any of the variables except that they were slightly older ($P < 0.06$, using unequal variance estimate) and more likely to be married. Participants were paid $10 for their participation.

Material and stimuli

The experiment was conducted in a laboratory consisting of two separate rooms. The subject room contained a comfortable easy chair, a Kodak slide projector, a 1 m² viewing screen, a 30 x 40 cm Quasar television monitor, and a Panasonic Model AG-5200 video cassette recorder. The experimenter room contained a Packard Bell 486 computer. Communication between the two rooms was conducted using a two-way intercom. Presentation of stimuli and recording of responses were carried out automatically using the PREFTEST 4.0 (Shadow Software) software program.

Penile circumference changes were measured using mercury-in-rubber strain gauges (Parks Electronics Laboratories). Electrical conductance changes in these gauges, corresponding to changes in
penile tumescence, were translated to changes in voltage using a Parks Plethysmograph (Model 240) and were registered and compiled by PREFTEST. Each gauge was calibrated using an aluminium cone (stepped in discrete increments of 10 mm circumference) before each experimental session to insure voltage change linearity (Earls & Jackson, 1981). Skin conductance changes were also obtained using silver-impregnated velcro finger electrodes fastened to the index and middle fingers of the dominant hand but were not analysed.

The stimuli consisted of slides of partially naked adult women considered very and equally attractive by a previous student sample (Lalumière & Quinsey, in preparation), a segment of a commercially available heterosexual erotic film, and three categories of audiotaped stimuli involving one adult male and one adult female. The three categories were neutral (non-sexual) interactions, consenting sex and non-consenting sex. The consenting sex category included four stimuli depicting consenting sex without aggression and two stimuli depicting consenting bondage and spanking. The non-consenting sex category included four stimuli depicting a rape of a female by a male. Two of the non-consenting stimuli depicted female suffering and two depicted female enjoyment in the latter part of the scenarios. Half of the stimuli were described from the female point of view and half from the male point of view (the two bondage stimuli were described from the male point of view and involved either a woman being spanked by a man or a man being tied up and teased by a woman). All stimuli except consenting bondage and spanking and neutral (Quinsey, Chaplin & Upfold, 1984) were taken from Rice et al. (1994).

Procedure
Participants were tested individually. They were first contacted by phone and informed about the general details of the experiment (i.e. the type of stimuli and the two physiological measures employed). At their arrival at the laboratory they were asked to fill out a consent form and a short questionnaire. The functioning of the strain gauge and the skin conductance electrodes was then explained, as well as the general purpose of the experiment ("to investigate men's response to various sexual stimuli"). Participants were then shown the subject-room and assured of their complete privacy.

The electrodes serving to record skin conductance changes were then installed by the researcher. The researcher then left the room and participants installed the strain-gauge. They remained alone during the experiment and communication was carried out through the intercom.

A neutral slide followed by three slides depicting partially naked adult women were presented. The first sexual slide was used as a warm-up stimulus. The second was presented five times for 45 sec to provide a measure of habituation and the third was presented once to provide a measure of recovery. One of two quasi-random orders of the audiotaped stimuli was then presented. During the presentation of the audiotapes, participants were instructed to press a button on their left when they perceived any sexual activities and a button on their right when they perceived that one of the partners was not consenting to the sexual activity (none of the participants pressed the right button during the presentation of the bondage stimuli). This procedure has been found to almost completely eliminate attempts at faking (Quinsey & Chaplin, 1988). Following this, the erotic tape was presented for 5 min to obtain an estimate of the participants' maximal response. A minimum 30 sec interval was allowed between stimulus presentations and stimuli were presented after complete detumescence.

The experiment lasted about one hour. Participants were then thanked and debriefed. The debriefing included a standardized oral presentation of the antisocial, illegal and immoral nature of sexual coercion.

Treatment of the data
Slide presentation. The peak penile response between stimulus onset and 30 sec after stimulus offset was recorded. Responses were standardized within subjects. Two participants did not show a penile response to a sexual stimulus greater than the 'response' to the neutral stimulus; analyses were conducted with and without these participants but no differences were observed. Data were not collected for one participant because of time restriction.

Audiotaped presentation. The peak penile response during stimulus presentation and including the next 30 sec was recorded. These responses were standardized within subjects. All participants showed a penile response to a sexual stimulus greater than to the neutral stimuli. Standardized
responses were averaged over categories (neutral, consenting, bondage, rape-enjoy, rape-suffer) for each of the narrator's points of view. Deviance indices were calculated by subtracting the mean response for the consenting category from the mean response for the deviant category. Positive scores therefore indicated sexual preference for the deviant category and, in light of Lalumiere and Quinsey's (1993) results, sexual deviance as well. Three indices were calculated: a rape index, using all rape categories; a bondage index, using the two bondage stimuli and a rape suffer index. The last index was calculated because the victim suffering category produced the best discrimination between sex offenders and non-sex offenders in Rice et al. (1994).

RESULTS

The variables sexual experience and sociosexuality were positively skewed (a few participants reported an extensive history of sexual activities). Missing data were rare. Some outliers and extreme scores were identified using the fourth-spread method (Hoaglin, Mosteller & Tukey, 1983). Precautions against violations of statistical assumptions, when necessary, are indicated below.

Intercorrelations

Demographics and study variables. Age correlated significantly (all P's < 0.05) with the composite variable sexual experience (+0.24) and socioeconomic status (−0.35). Socioeconomic status correlated significantly with self-esteem (+0.21), acceptance of interpersonal violence (−0.25), hostility towards women (−0.29), the hostility composite (−0.25), Levenson's secondary psychopathy (−0.29), Levenson's psychopathy (−0.22), sexual experience (−0.19), sociosexuality (−0.21) and psychopathy taxon (−0.30). Non-parametric correlations produced similar results.

Participants with at least some university education (n = 69), compared with those without any (n = 29), had lower scores on the three Levenson psychopathy scales t(96) = 2.11 to 2.70, P < 0.05, and on the psychopathy taxon scale, t(96) = 3.74, P < 0.001.

Study variables. Significant bivariate correlations (Pearson r) are presented in Table 1 (the full correlation matrix is available from the first author). The hostility composite was positively associated with the psychopathy variables and with likelihood of non-physical and physical coercion. The psychopathy variables were positively associated with variables indexing mating effort, with future likelihood of sexual coercion, and with sensation seeking. Not shown in Table 1, the mating effort variables were strongly intercorrelated (rs ranged from 0.31 to 0.75, excluding use of more effective mating tactics), sensation seeking was associated with future likelihood of non-physical coercion (e.g. r with total score = 0.29), and self-perceived mating success was positively associated with self-esteem (r = 0.30).

There was only one significant correlation between sexual deviance and the other study variables: rape-suffer and acceptance of interpersonal violence (−0.44). There was also a negative rape index correlation between acceptance of interpersonal violence and the overall rape index using a non-parametric test (−0.46). The overall rape index and the bondage index were strongly correlated (+0.53).

Factor analysis. A principal component factor analysis with varimax rotation was used to further investigate the interrelationships of 12 indicators of mating effort and antisociality. Sexual deviance was not included in this analyses because only 30 participants underwent phallometric assessment. The solution contained three factors with eigenvalues greater than one. The factor loadings (0.30 and greater) are reported in Table 2. The first factor accounted for 32.3% of the variance and seems to describe a successful short-term approach to mating, antisocial characteristics and high sensation seeking. The second factor accounted for 15.1% of the variance and describes antisocial and hostile tendencies. The third factor accounted for 11.8% of the variance and describes a successful approach to mating with a positive self-evaluation.

The correlation matrix and the factor analysis thus suggest that mating effort is closely related to sensation seeking and antisocial characteristics, and that hostile tendencies are closely related to self-reported likelihood of engaging in non-physical and physical sexual coercion in the future. Deviance indices were not significantly correlated with any of the factors.
Table 1. Bivariate correlations

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<th>HTW</th>
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<td>0.29</td>
<td>0.22</td>
<td>0.43</td>
<td>0.43</td>
<td>0.37</td>
<td>0.33</td>
</tr>
<tr>
<td>Self-Perceived</td>
<td>0.39</td>
<td>0.36</td>
<td>0.29</td>
<td>0.26</td>
<td>0.41</td>
<td>0.43</td>
<td>0.43</td>
<td>0.29</td>
<td>0.41</td>
</tr>
<tr>
<td>Mating success</td>
<td>-0.24</td>
<td>0.32</td>
<td>0.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-esteem</td>
<td>0.37</td>
<td>0.29</td>
<td>0.20</td>
<td>0.26</td>
<td>0.34</td>
<td>0.23</td>
<td>0.23</td>
<td>0.29</td>
<td>0.34</td>
</tr>
</tbody>
</table>

Notes: 'n = 91; 'n = 98; 'n = 97.
P > 0.05 using a non-parametric test.
**P < 0.05 using a non-parametric test.
AIV Acceptance of Interpersonal Violence.
ASB Adversarial Sexual Belief.
SRS Sex Role Stereotyping.
HTW Hostility Towards Women.

Group differences

Seven participants indicated not having experienced intercourse, 38 indicated a non-coercive sexual history, 43 indicated some non-physically coercive experience but no physically coercive experience, and 11 indicated some physically coercive experience. Means and standard error bars of major study variables are presented in Fig. 1. It can be seen that sexually coercive individuals were more antisocial and reported more extensive mating efforts.
Sexual deviance, antisociality, and mating effort

Table 2. Factor loadings of the three factors

<table>
<thead>
<tr>
<th>Variables</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensation seeking (total)</td>
<td>0.80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preference for partner variety</td>
<td>0.73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexual experience</td>
<td>0.69</td>
<td>0.35</td>
<td></td>
</tr>
<tr>
<td>Levenson's psychopathy (total)</td>
<td>0.54</td>
<td>0.49</td>
<td></td>
</tr>
<tr>
<td>Psychopathy taxon</td>
<td>0.55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hostility composite</td>
<td></td>
<td>0.80</td>
<td></td>
</tr>
<tr>
<td>Likelihood of non-physical coercion</td>
<td>0.31</td>
<td>0.73</td>
<td></td>
</tr>
<tr>
<td>Likelihood of physical coercion</td>
<td>0.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of less effective mating tactics</td>
<td>0.45</td>
<td>0.64</td>
<td></td>
</tr>
<tr>
<td>Self-esteem</td>
<td>-0.31</td>
<td>-0.51</td>
<td>0.72</td>
</tr>
<tr>
<td>Use of more effective mating tactics</td>
<td>-0.33</td>
<td>0.71</td>
<td></td>
</tr>
<tr>
<td>Self-perceived mating success</td>
<td>0.53</td>
<td></td>
<td>0.56</td>
</tr>
</tbody>
</table>

Because of unequal sample sizes and small sample sizes in the first and fourth groups, two groups were formed: non-sexually coercive (n = 45) and sexually coercive (n = 54) participants. These two groups were compared using t-tests and the results are presented in Table 3. Sexually coercive participants, compared with non-coercive participants, were older, had lower socioeconomic status, and had higher scores on variables indexing mating effort, psychopathy and sensation seeking. There were no differences on variables indexing hostility and sexual deviance. Sexually coercive participants reported higher self-perceived mating success and higher likelihood of engaging in non-physical sexual coercion in the future.

The use of age and impression management as covariates resulted in the variables preference for partner variety and casual sex, primary psychopathy, secondary psychopathy, and likelihood of non-physical coercion becoming marginally significant (P < 0.09) and the variable self-esteem becoming significant (P < 0.05; coercive participants having higher scores).

The sexual preference profiles of both groups are presented in Fig. 2. Non-sexually coercive and sexually coercive participants showed similar preferences. The bondage stimuli and the rape stimuli produced similar levels of arousal. Four participants (13.3%) would be classified as sexually deviant using Lalumière and Quinsey's (1993) decision rule.

Subsidiary analysis

Lalumière et al. (submitted (a)) reported a multiple correlation of 0.44 between the two variables preference for partner variety and likelihood of non-physical sexual coercion, and the variable self-reported sexual coercion in a sample of 156 young university males. The regression weights obtained in Lalumière et al. were used in the present sample to predict sexual coercion using the same two predictors. The correlation of the predictor score and self-reported sexual coercion was 0.57 using Pearson r (P < 0.001) and 0.69 using Spearman rs (P < 0.001).

Habituation

A two (mating effort: low, high) by eight (stimulus category: neutral, warm-up, habituation one to five, novel stimulus) mixed analysis of variance was conducted to determine whether participants showed penile habituation in the laboratory and whether this habituation was moderated by mating effort. The assignment of participants to levels of mating effort was made on the basis of the sociosexuality inventory scores (median split). Figure 3 shows that the mean response decreased over repeated presentation of the same stimulus and recovered with the presentation of a new
stimulus. The main effect of stimulus was significant, $F(7, 175) = 7.71$, $P < 0.001$, but the interaction stimulus by mating effort was not $F(7, 175) = 1.05$, $P > 0.35$. Orthogonal mean comparisons revealed that the last two repeated presentations produced lower responses than the first two, $t(1, 175) = -2.76$, $P < 0.01$, and that the novel stimulus presentation produced higher responses than the combination of all other sexual stimulus presentations, $t(1, 175) = 4.82$, $P < 0.001$. 

Fig. 1. Assessment of sexual deviance: mean standardized penile response as a function of stimulus category and group membership.
Table 3. Group comparisons on study variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Non-coercive Mean (s.d.)</th>
<th>Coercive Mean (s.d.)</th>
<th>df</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>22.0 (3.0)</td>
<td>23.9 (4.0)*</td>
<td>97</td>
<td>-2.69**</td>
</tr>
<tr>
<td>Socioeconomic status</td>
<td>58.7 (18.0)</td>
<td>50.7 (18.4)</td>
<td>96</td>
<td>2.18*</td>
</tr>
<tr>
<td>Mating effort</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexual experience</td>
<td>-0.33 (0.55)</td>
<td>0.27 (0.81)</td>
<td>96</td>
<td>-4.18***</td>
</tr>
<tr>
<td>Number of partners per sexually active year</td>
<td>1.1 (0.9)</td>
<td>2.1 (2.6)*</td>
<td>89</td>
<td>-2.27*</td>
</tr>
<tr>
<td>Preference for partner variety</td>
<td>-0.17 (0.64)</td>
<td>0.14 (0.68)</td>
<td>97</td>
<td>-2.28*</td>
</tr>
<tr>
<td>Mating tactics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More effective</td>
<td>6.0 (0.7)</td>
<td>6.0 (0.5)</td>
<td>97</td>
<td>0.13</td>
</tr>
<tr>
<td>Less effective</td>
<td>3.1 (0.7)</td>
<td>3.5 (0.9)</td>
<td>97</td>
<td>-2.65**</td>
</tr>
<tr>
<td>Sociosexuality inventory</td>
<td>65.4 (26.9)</td>
<td>104.0 (80.6)*</td>
<td>95</td>
<td>-3.06**</td>
</tr>
<tr>
<td>Antisociality</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Levenson's psychopathy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>2.0 (0.4)</td>
<td>2.2 (0.5)</td>
<td>97</td>
<td>-2.36*</td>
</tr>
<tr>
<td>Secondary</td>
<td>1.9 (0.5)</td>
<td>2.1 (0.6)</td>
<td>97</td>
<td>-1.96*</td>
</tr>
<tr>
<td>Psychopathy taxon</td>
<td>2.0 (0.5)</td>
<td>2.2 (0.5)</td>
<td>97</td>
<td>-2.08*</td>
</tr>
<tr>
<td>Burt's adversarial sexual beliefs</td>
<td>2.8 (0.8)</td>
<td>3.1 (1.1)*</td>
<td>97</td>
<td>-1.55</td>
</tr>
<tr>
<td>Sex role stereotyping</td>
<td>2.5 (1.0)</td>
<td>2.5 (1.0)</td>
<td>97</td>
<td>-0.4</td>
</tr>
<tr>
<td>Interpersonal violence</td>
<td>2.0 (0.7)</td>
<td>2.2 (0.9)*</td>
<td>97</td>
<td>-1.35</td>
</tr>
<tr>
<td>Hostility towards women</td>
<td>1.3 (0.1)</td>
<td>1.3 (0.2)</td>
<td>97</td>
<td>-0.21</td>
</tr>
<tr>
<td>Likelihood of sexual coercion</td>
<td>0.97 (0.1)</td>
<td>0.99 (0.1)</td>
<td>97</td>
<td>-0.64</td>
</tr>
<tr>
<td>Bondage index</td>
<td>-0.65 (0.64)</td>
<td>-0.72 (0.82)</td>
<td>28</td>
<td>0.29</td>
</tr>
<tr>
<td>Rape index</td>
<td>-0.61 (0.92)</td>
<td>-0.78 (0.66)</td>
<td>28</td>
<td>0.60</td>
</tr>
<tr>
<td>Rape suffer index</td>
<td>-0.65 (0.86)</td>
<td>-0.97 (0.62)</td>
<td>28</td>
<td>1.19</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensation seeking</td>
<td>22.4 (5.7)</td>
<td>26.2 (4.7)*</td>
<td>97</td>
<td>-3.27**</td>
</tr>
<tr>
<td>Experience seeking</td>
<td>0.1 (2.4)</td>
<td>7.1 (2.0)</td>
<td>97</td>
<td>-2.31*</td>
</tr>
<tr>
<td>Thrill and adventure seeking</td>
<td>7.4 (2.5)</td>
<td>8.0 (1.5)*</td>
<td>97</td>
<td>-3.02**</td>
</tr>
<tr>
<td>Disinhibition</td>
<td>5.1 (2.6)</td>
<td>6.4 (2.0)</td>
<td>97</td>
<td>-2.73**</td>
</tr>
<tr>
<td>Boredom susceptibility</td>
<td>3.9 (0.3)</td>
<td>4.1 (1.8)</td>
<td>97</td>
<td>-2.06**</td>
</tr>
<tr>
<td>Self-perceived mating success</td>
<td>4.2 (1.1)</td>
<td>4.8 (1.0)</td>
<td>97</td>
<td>-2.59**</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>3.2 (0.6)</td>
<td>3.4 (0.5)</td>
<td>97</td>
<td>-1.64</td>
</tr>
<tr>
<td>Likelihood of sexual coercion:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensation-seeking only</td>
<td>1.7 (0.9)</td>
<td>2.2 (1.5)</td>
<td>97</td>
<td>-1.96</td>
</tr>
<tr>
<td>Physical</td>
<td>1.2 (0.6)</td>
<td>1.3 (0.9)</td>
<td>97</td>
<td>-1.03</td>
</tr>
</tbody>
</table>

Notes: Composite variables were prorated.

*Heterogeneous variances; similar results using separate variance estimate.

**Heterogeneous variances; \( P < 0.05 \) using separate variance estimate.

*\( P < 0.05 \); **\( P < 0.01 \); ***\( P < 0.001 \); t\( P < 0.06 \).

Fig. 2. Group means and standard error bars for the major study variables.
DISCUSSION

Indicators of antisociality and mating effort were associated with one another and a sexually coercive history. The strongest risk indicators of sexual coercion were psychopathy (as assessed by an early history of behavior problems), sensation seeking, self-perceived mating success, and an extensive history of uncommitted sexual relationships.

Sensation seeking, Levenson's psychopathy, and the psychopathy taxon measures are all part of factor 1, together with preference for partner variety and sexual experience. The close inter-relationships within this constellation of variables is theoretically expectable and replicates previous findings obtained in our laboratory (Seto et al., submitted; Seto et al., 1955). Many characteristics associated with psychopathy, such as opportunism, impulsiveness, callousness, and manipulativeness would facilitate a short-term approach to sexual relationships. Similarly, sensation seeking would be expected to correlate highly with a desire for partner novelty. The nature of factor 1 is consistent with the conclusion of Lalumière et al. submitted (a) that sexually coercive young men have adopted an opportunistic approach to mating in which they are not interested in compromising with the long-term mating strategy typically preferred by women. The correlations between mating effort and antisociality indicators were fairly high but not high enough to establish that they refer to the same construct. Seto et al. (submitted) recently found that community subjects scoring high on measures of psychopathy use deception in both sexual and non-sexual domains.

As an aside, Belsky, Steinberg and Draper (1991) have argued that low parental investment causes children to adopt short-term mating strategies marked by precocious puberty, early sexual behavior, unstable pair bonding and low parental investment in adulthood. In this view, mating effort and antisociality indicators were fairly high but not high enough to establish that they refer to the same construct. Seto et al. (submitted) recently found that community subjects scoring high on measures of psychopathy use deception in both sexual and non-sexual domains.

The failure of factor 2 to significantly predict sexual coercion at first appears to be at variance with previous research conducted by ourselves and others. Sexually coercive men typically rate themselves as more likely to use coercion in the future and are more hostile. In addition, sexual coercion would likely be a mating tactic that would be considered to be 'less effective'. Three issues are likely to be responsible for the lack of significance of factor 2. The first is its poor statistical properties (slightly skewed and platykurtic). The second, and more important issue, is its overlap
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with factor 1 with respect to antisociality and the likelihood of using non-physical sexual coercion in the future. It is thus possible that the association between hostile attitudes and sexual coercion obtained in previous research was due to a failure to account for sexual experience and desire for partner variety; in other words, hostile men may be sexually coercive only when they are also sexually experienced and successful.

The failure to relate sexual coercion to phallometric assessment of sexual deviance was unanticipated and requires examination. Two meta-analyses have shown that phallometric deviance indices discriminate officially identified rapists from other men (Hall et al., 1993; Lalumière & Quinsey, 1994). Although the latter meta-analysis found stimulus set to moderate between-group differences, the stimuli used in the present study have been shown to possess excellent ability to discriminate officially identified rapists from non-rapists: the discrimination obtained with these stimuli was so good that the study employing them (Rice et al., 1994) was identified as an outlier in the Lalumière and Quinsey meta-analysis. The scoring procedures found by Harris, Rice, Quinsey, Chaplin and Earls (1992) to maximize discriminant validity were employed, as well as the method devised by Quinsey and Chaplin (1988) to minimize faking in phallometric assessments. Moreover, all 30 subjects tested were naive with respect to phallometric procedures. In short, all of the methods known to increase discriminant validity (except the number of exemplars per category) were used in this investigation.

If the failure to discriminate sexually coercive men is not to be accounted for in the procedure or stimuli, it is likely that it involves the study participants. The average rape index of the 30 participants was smaller than the average rape index of 14 rapists tested by Rice et al. (1994), t(42) = -6.27, P < 0.001, but larger than that of their 14 non-rapists, t(42) = 4.34, P < 0.001 (this was true for both sexually coercive and non-coercive participants). The most plausible interpretation of these results, therefore, is that the identified rapists, who committed much more aggressive crimes than those that the sexually coercive men in the current sample endorsed in the modified Koss scale, were much more likely to have sexual interests in coercive or sadistic activities. It was also highly likely that the current sample of sexually coercive men were primarily date or acquaintance rapists, whereas the majority of rapists in Rice et al. typically sexually assaulted strangers or persons with whom they had established no romantic relationship.

These observations suggest one important reason that the literature on rape remains confused. Although many investigators agree that rapists are heterogeneous and all studies report whether their study participants are identified by self-report or official documents, men who repetitively assault strangers in a predatory, violent and often sadistic manner. and men who report that they have held their dates' arms down in order to have sex with them or have ignored their dates' requests to stop are both labelled as 'rapists' or as 'sexually coercive'. Although there are some similarities between these behaviors, there are also large differences and the data gathered here indicate that they reflect similarly large differences between the men that exhibit them. The results concerning mating effort and antisociality obtained in this study thus only apply to men who have engaged in sexually coercive behaviors as defined by the items on the Koss scale.

The next step in this line of research is to compare self-identified rapists, self-identified non-rapists and officially identified rapists on variables indexing antisociality, mating effort and sexual deviance. The use of structural equation modelling with large enough samples would allow stronger inferences as to the interrelationships of these variables. It is expected that antisociality and mating effort will be intercorrelated and that both will be related to sexual coercion regardless of the definition of sexual coercion, but that sexual deviance will be more relevant to more serious forms of coercion.

Another research avenue to pursue is the age-related change in mating effort as a function of variables related to mating success. Older men are more often preferred by women as marriage partners (Kenrick & Keefe, 1992), especially those who are able to acquire resources and status (Buss, 1989). Sensation seeking often peaks in early adulthood, a period of intense mate competition, and steadily drops afterwards (Zuckerman, Eysenck & Eysenck, 1978). Psychopaths are less active
in late adulthood but they still retain the personality aspects of psychopathy (Hare & Forth, 1992). Yet another potentially fruitful research avenue is the study of the relationship between variations in self-perceived mating success and variations in mating effort (Lalumière et al., submitted (b)), nothing is known about the effects of changes over time in self-perceived mating success on mating effort in general, and on different aspects of mating in particular (e.g. extra-pair romances, divorce, separation and remarriage, and sexual coercion). We are currently addressing some of these issues using a longitudinal design.

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