Personality and Neuropsychological Correlates of Male and Female Sexual Offenders

ABSTRACT
The present study examined the personality and neuropsychological correlates of convicted male and female sex offenders. The investigators measured DSM-IV-TR psychopathology and neuropsychological dysfunction among rapists and child molesters using the Coolidge Axis II Inventory, a valid and reliable assessment instrument. Male child molesters displayed significantly higher Apathy scores than age-matched male controls. Male non-sexual offenders scored significantly higher than male child molesters, rapists, and controls on Histrionic Personality Disorder, Impulsivity, and Disinhibition. Female child molesters reported significantly elevated levels of psycho and neuropathology when compared to female non-offenders. Specifically, female child molesters reported greater Language Problems and Executive Dysfunction, along with greater levels of Psychoticism and Paranoia, when compared to female controls. The implications of these findings are discussed.

KEYWORDS: personality, neuropsychology, sexual offenders, executive dysfunction, child molestation, rape

In the past 40 years a significant trend has emerged toward increased empirical attention on the etiology and treatment of sexual offense. Along with science, society has also taken notice of the tremendous impact sexual assault can have on victims and communities. Despite increased research awareness, efforts at understanding and treating sexual offenders have met with modest success.

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Several studies have found that sexual offense is associated with high rates of lifetime mood disorders (ranging from 61 to 80%), moderate to high rates of substance abuse (46 to 83%), and moderate rates of anxiety disorders (36 to 47%). Additionally, sexual perpetration has also been strongly associated with DSM-IV cluster B personality disorders (PDs) (92%), while a more modest association has been shown with cluster C (36%) and cluster A (28%) PDs. It should be noted, however, that the lack of control groups in these studies limit potential interpretations.

Differences have been noted between convicted sexual offenders and convicted non-sexual offenders on personality assessment measures. Retzlaff et al. found that sexual offenders scored higher than nonsexual offenders on the following Millon Clinical Multiaxial Inventory – Third Edition (MCMI-III) scales: schizoid, avoidant, depressive, dependent, self-defeating, schizotypal, anxiety, somatoform, dysthymia, post-traumatic stress disorder (PTSD), thought disorder, major depression, and delusional disorder. Johnston and Johnston also found differences between male child molesters and a non-offender control group on projective measures of personality (i.e., human figure drawings).

As research concerning the etiology of sex offense has evolved, empirical attention has begun to focus on the possible role of brain dysfunction. As research focusing on the correlation between brain dysfunction and sexual offense is hardly a novel idea. Beginning with the seminal work of Kraft-Ebbing in 1886 (Psychopathia Sexualis), many researchers have attempted...
to link sexual disorders with neuropsychological correlates. One-hundred years later, Flor-Henry proposed a neuropsychological theory of sexual offending. Based in part on the original hypothesis by Luria that neuropsychological differences exist in sex offenders, Flor-Henry proposed that sexual offenders would exhibit increased left hemispheric dysfunction when compared to non-sexual offender criminals.

Flor-Henry’s theory certainly has its limitations. In fact, results from select studies have failed to identify prominent neuropsychological correlates of sexual offending. It should be noted, however, that these studies themselves have notable drawbacks, such as limited statistical power.

Murray et al. compared neuropsychological profiles of male sex offenders with a learning disability to male non-offenders with a learning disability. When controlling for Wechsler Adult Intelligence Scale – Third Edition (WAIS-III) Full Scale IQ, the researchers found that the sexual offenders had a significantly lower verbal than performance IQ (a pattern not observed in the non-offender sample) and showed lower scores on the vocabulary subtest and higher scores on the object assembly subtest of the WAIS-III. Langevin et al., using computerized tomography (CT) scans and neuropsychological testing, found that heterosexual and homosexual pedophiles showed verbal deficits and left hemispheric brain dysfunction, while bisexual pedophiles showed right hemispheric visuospatial deficits. Other researchers have concluded that particular neuropsychological deficits are significantly associated with, and may be central to, sexual offending behaviour.

Although evidence exists that temporal lobe dysfunction may be strongly associated with sexual deviation, particularly in the area of hypersexuality, the most compelling empirical support appears to be for the dysfunctional role of the frontal lobes in the development and maintenance of sexual disorders. Lishman found that orbitofrontal damage was associated with hypersexuality and
sexual criminality. Additionally, Small and Small found that neurosurgical damage to the prefrontal cortex (i.e., prefrontal lobotomy) produced uncontrollable hypersexuality. Wright et al. also found that pedophiles displayed frontal lobe dysfunction on a CT scan relative to controls. Additionally, Hucker et al. found that sadistic sexual offenders demonstrated anterior horn enlargement in comparison to non-sadistic sexual offenders, indicating loss of frontal lobe tissue. Moderate-to-severe impact to the orbitofrontal regions as the result of closed head injury also has been shown to produce a significant decrease in sexual inhibition and an overall decrement in executive functioning.

Empirical attempts at elucidating potential neuropsychological correlates of sexual offense have traditionally focused on the results of neuropsychological assessment measures. Many studies provide support for the validity of this technique as well as the efficacy and sensitivity of this procedure over neurological tests administered in isolation. Using this procedure, Yeudall and Fromm-Auch found that 96% of the sex offenders they studied exhibited pronounced neuropsychological deficits. The researchers concluded that the pattern of responses implicated dysfunction primarily in the frontotemporal regions of the brain.

Despite the growing body of research concerning the etiology of sexual offense, there has been a relative dearth of literature examining gender differences among sexual offenders. Eher et al., using 48 incarcerated male child molesters, examined differences in DSM-IV psychopathology on the basis of the gender of the offender’s victim. In this study, offenders were divided on the basis of the whether their victims were either (1) exclusively male or (2) female, or (3) both sexes. Using the Structured Clinical Interview (SCID) for DSM-IV, offenders were assessed by MTC:CM3 child molester typology; participants also completed self-report instruments that measured aggressiveness, anger, depression, anxiety, and social anxiety. Results revealed that psychiatric comorbidity did not differ significantly on the basis of victim’s gender, with the exception being that of alcohol abuse/dependence (found to be significantly higher in the female/mixed gender victim group). Although male target offenders were found to be less socially competent, no significant differences were found on measures of aggressiveness, anger, depression, anxiety, or social anxiety.

Additional research has also been conducted examining victim gender preference among adolescent and adult sex offenders, although no published research to
date has explicitly investigated the possible psycho and neuropsychological gender differences in sexual criminality. This is surprising given the rise in the numbers of female sex offenders in the United States. According to the U.S. Department of Justice, convicted female sex offenders were relatively rare 20 to 25 years ago, although the number of female offenders has risen every year since 1980, when there were only approximately 100 in America. As of 2002, that number has risen to more than 1,200.33

The present study attempts to fill this empirical gap by examining the psycho and neuropsychological correlates of male and female sexual offenders. Heeding the burgeoning methodological emphasis on using non-sexual offenders as a control group,8,34 the current investigation followed this trend by employing a male non-sexual offender group and non-offender control groups for both males and females.

For male offenders, it was hypothesized that rapists would demonstrate increased levels of antisocial personality disorder and narcissistic personality disorder in comparison to child molesters. Based on the work of Retzlaff et al.6 it was further hypothesized that both groups of sexual offenders would have increased levels of anxiety as well as personality traits indicative of schizoid and schizotypal personality disorder (compared to non-sexual offenders and controls). In addition, the male sexual offender groups were hypothesized to display increased executive functioning problems when compared to non-sexual offenders and controls.

For female offenders, it was hypothesized that female child molesters would demonstrate increased depression and anxiety when compared to control participants. Additionally, child molesters were hypothesized to endorse increased neuropsychological problems in the form of increased executive dysfunction, impulsivity, and language problems.

**Method**

**Participants**

Participants were adult male and female convicted sexual offenders, non-sexual convicted offenders, and non-offenders. The sexual offender sample consisted of 62 child molesters (48 males and 14 females, mean age = 38.7 years, SD = 8.6, age range 22 to 60 years) and 18 rapists (all males, mean age = 34.7 years, SD = 8.8, age range 20 to 52 years). All sexual offender participants were convicted and found guilty of either child molestation (77.5%) or rape (22.5%) (no participants in the present study were found guilty of both crimes). All sexual offender participants were incarcerated at a Colorado Department of Corrections facility at the time of the study.
A control group composed of non-offenders, matched as closely as possible in terms of age and ratio of males to females, was employed and consisted of 71 males and 45 females (mean age = 29.1, SD = 10.6, age range 16 to 64 years). Archival data on 166 adult male non-sexual offenders (mean age = 36.3, SD = 8.7, age range = 20 to 56 years) was used. This group was composed of convicted Colorado inmates who had no record of sexual offense; these individuals were matched as closely as possible in terms of age to the child molester and rapist groups. Participation was voluntary for all groups in the present study; no participants received compensation of any kind for their participation.

**Materials and Procedure**

All participants were administered the Coolidge Axis II Inventory (CATI) as part of a larger study battery. The CATI is a self-report, 225-item pencil and paper test designed to assess personality disorders and neuropsychological dysfunction. Taking 35 to 40 minutes to complete, it measures 5 DSM-IV-TR Axis I disorders, 13 Axis II personality disorders (1 personality disorder is contained in the DSM-IV-TR Appendix), 5 scales of personality change due to a medical condition, and 8 neuropsychological scales (4 of which measure executive functioning). Additionally, the CATI contains 10 scales assessing indecisiveness, emotional lability, apathy, anger, impulsiveness, dangerousness, withdrawal, psychotic thinking, introversion-extroversion, and adjustment.

The CATI is a well-validated and highly reliable self-report measure of DSM-IV-TR Axis I and Axis II disorders. The 13 personality disorder scales of the CATI were found to have a mean test-retest reliability of .90 and a median internal consistency of .76 (Cronbach’s alpha). The median reliabilities for each Axis II Scale were reported by Coolidge and Merwin as: antisocial, .86; avoidant, .80; borderline, .80; paranoid, .79; passive aggressive, .78; histrionic, .76; narcissistic, .74; dependent, .87; schizotypal, .73; schizoid, .73; sadistic, .69; obsessive compulsive, .68; and self defeating, .66. The CATI has also been normed on a Canadian population and the Axis II scales have been analyzed using a five-factor model perspective. Research also provides strong support for the validity of the CATI neuropsychological dysfunction subscales.

**Results**

A one-way between-groups analysis of variance (ANOVA) was performed in an effort to explore differences between type of crime committed and psycho and neuropsychological pathology as indicated by the CATI subscales. Separate ANOVA’s were conducted for males and females,
as sexual offense literature has shown there are significant gender differences in type of offending behaviour.\textsuperscript{43} The Bonferroni correction was used to control for Type I error in all analyses.

\textbf{Males}

Given that no female rapists were recruited in this sample, four male groups were compared (rapists, child molesters, non-sexual offenders, and non-offender controls). Male groups differed significantly on the following CATI scales: histrionic PD, narcissistic PD, disinhibition, apathy, executive functioning – planning problems (EXPP), and impulsivity.

\textbf{Axis I}

No statistically significant between-group differences in Axis I functioning were found.

\textbf{Axis II}

Post-hoc comparisons using the Tukey Honest Significant Difference test revealed significant differences on the histrionic personality disorder (HPD) scale, with non-sexual offenders showing elevated levels of HPD in comparison to both male child molesters and male non-offenders (eta squared = .06). The HPD scores for the control participants very closely approximated those of the rapists. The scores of non-offender controls on the CATI NPD scale were significantly greater than male child molesters and non-sexual criminal offenders ($p < .001$; eta squared = .07). Rapists and non-sexual offenders had greater levels of antisocial PD (APD) in comparison to controls, although these groups did not differ significantly from child molesters with respect to APD ($p = .004$, eta squared = .15). This finding narrowly missed statistical significance as defined by the Bonferroni correction ($p = .003$). Additionally, a statistical trend was observed in that male child molesters demonstrated higher levels of schizotypal PD than controls ($p = .015$), although this finding also narrowly missed achieving statistical significance using the Bonferroni correction ($p = .013$).

\textbf{Neuropsychological Functioning}

Significant differences in terms of type of criminal activity for males were also found on two CATI Executive Functioning scales: planning problems (EXPP) and impulsivity. Male child molesters, rapists, and non-sexual criminal offenders, when compared to controls, all endorsed increased executive functioning problems in the form of planning difficulties ($p = < .001$; eta squared = .06) (note: lower scores on the EXPP scale denote greater problems). In contrast, male non-sexual criminal offenders rated themselves as more impulsive than male controls and male child molesters ($p = .001$; eta squared = .08).
Male non-sexual offenders had higher scores on disinhibition in comparison to both male non-offenders and male child molesters ($p < .001$; eta squared = .10). On the CATI scale of apathy, male child molesters’ scores were significantly elevated in comparison to controls. Additionally, non-sexual criminal offenders’ apathy scores were elevated in comparison to non-offenders ($p = .001$; eta squared = .05) (Table 1).

**Females**

Due to aforementioned research specifying unique gender differences among sex offenders, separate statistical analyses were conducted for females. Multiple independent-samples t tests were performed in an effort to explore differences in psycho and neuropathology among female child molesters and age-matched non-offenders. Due to difficulties in recruitment, a female non-sexual offender sample was not obtained.
**Response Style**

Results revealed that female child molesters had elevated tendency to deny blatant pathology (TDBP) scores in comparison to controls ($p = .004$). Higher scores on the CATI's TDBP scale indicate an overall greater endorsement of pathology, so this finding should be interpreted to mean that female child molesters endorsed increased amounts of psychopathology in comparison to female controls. It should be noted that TDBP scores of both groups were in the normal (i.e., valid) range ($T = 54.81$).

**Axis I**

No statistically significant differences in Axis I functioning were obtained, although a notable trend was found for female child molesters endorsing greater amounts of depression than age-matched female controls ($p = .033$; eta squared $=.08$). This trend failed to meet the Bonferroni correction-imposed standard for statistical significance ($\alpha = .01$).

**Axis II**

No statistically significant differences in Axis II functioning were obtained, although the following statistical trends were observed. Female child molesters exhibited elevated scores on the paranoid PD scale in comparison to control scores ($p = .015$; eta squared $=.10$). Additionally, female child molesters also exhibited greater scores on the dependent PD scale ($p = .004$), with a large effect size obtained for this result (eta squared $=.14$). Both results did not meet the Bonferroni criterion for statistical significance ($p = .003$).

**Neuropsychological Functioning**

As hypothesized, female child molesters showed increased evidence of neuropsychological dysfunction in contrast to female controls. Specifically, female child molesters showed significantly higher scores on the CATI scales of language problems ($p = .001$) (eta squared $=.19$), executive dysfunction (EXDD) ($p = .001$) (eta squared $=.17$), and executive functioning problems (EXECF) ($p = .018$) (eta squared $= .09$).

**Other Scales**

Child molesters exhibited significantly elevated levels of psychoticism when compared to non-offenders ($p < .001$) (eta squared $=.21$). Additionally, female child molesters showed elevated scores on the CATI paranoia scale in comparison to female controls ($p < .001$) (eta squared $=.19$), paralleling earlier trends of high levels of paranoid PD scores in female sexual offenders (Table 2).

**Discussion**

In summary, the personality and neuropsychological correlates of sexual offending behaviour appear...
to be quite divergent for males and females. Although male child molesters appeared more apathetic than male rapists, non sexual-offenders, and male controls, they did not appear to endorse higher levels of psycho- or neuropathology in comparison to other groups in this study. Rapists and male non-sexual offenders displayed a considerable trend toward increased antisocial characteristics when compared to age-matched controls. Non-sexual male offenders

<table>
<thead>
<tr>
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<th>Controls (SD)</th>
<th>Child Molesters (SD)</th>
<th>t</th>
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<tr>
<td>Depression</td>
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<tr>
<td>DPD</td>
<td>45.09 (9.18)</td>
<td>55.40 (12.09)</td>
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<td>PPD</td>
<td>46.14 (8.58)</td>
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<td>6.24</td>
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<td>Language Prob.</td>
<td>46.51 (7.30)</td>
<td>55.62 (10.52)</td>
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<td>Exect. Dysfun.</td>
<td>46.19 (8.79)</td>
<td>56.09 (11.28)</td>
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<td>Exect. Functin.</td>
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<td>54.61 (14.12)</td>
<td>5.95</td>
<td>.018*</td>
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<td>Psychoticism</td>
<td>48.32 (9.57)</td>
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<td>Paranoia</td>
<td>46.14 (8.58)</td>
<td>55.53 (8.27)</td>
<td>13.01</td>
<td>&lt;.001*</td>
<td>.19</td>
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<td>Intro.- Extra.</td>
<td>48.63 (11.08)</td>
<td>40.23 (8.25)</td>
<td>6.82</td>
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<td>.11</td>
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<td>TDBP</td>
<td>45.83 (9.10)</td>
<td>54.81 (12.00)</td>
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<td>.004*</td>
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*significant after Bonferroni correction.

DPD = dependent personality disorder; PPD = paranoid personality disorder; Intro. – Extra. = introversion – extraversion; TDBP = tendency to deny blatant pathology.
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Other researchers have concluded that particular neuropsychological deficits are significantly associated with, and may be central to, sexual offending behaviour.

As hypothesized, female child molesters showed increased evidence of neuropsychological dysfunction in contrast to female controls.

Male child molesters, rapists, and non-sexual criminal offenders, when compared to controls, all endorsed increased executive functioning problems in the form of planning difficulties.

Also appeared to be more impulsive and attention-seeking than male child molesters. The male offender groups displayed lower than expected levels of narcissistic thought and behaviour and rated their degree of narcissism as significantly less than that of male controls.

As hypothesized, female child molesters exhibited greater neuropsychological difficulties than controls as exemplified by problems with language and executive dysfunction. Female child molesters also appeared to have increased indications of possible psychotic processes, including psychoticism, and paranoia. Overall, female sexual offenders tended to endorse a more unique (and possibly more severe) level of psycho and neuropathology than their male counterparts. These findings suggest that this group may also be difficult to treat effectively.

Previous research has provided evidence pointing to a higher recidivism rate for male sexual offenders. This rate appears to be elevated among male child molesters with male victims.44–47 The current findings of increased apathy observed in male child molesters may shed light on these results.

Although in the current study females who were convicted of sexual offenses displayed elevated and more diverse pathology, the present findings of male apathy and trends towards greater detachment in social relationships corroborate existing findings of social detachment among male sex offenders obtained by Eher et al.30 Such findings may point to the need for different modes of thought in examining the various precipitating and perpetuating mechanisms involved in male and female sexual offense. Similarly, these findings serve to underscore the need for divergent customized treatments for male and female sexual offenders.
Undoubtedly, sexual criminality, as with all behaviour, needs to be considered within the individual’s social milieu. The psychological and neuropsychological correlates of this behaviour are simply small steps in addressing this complex phenomenon. It appears that other research supports this conclusion. It is particularly important to examine the social context of the individual’s behaviour in light of the lack of definitive coherence in this line of research.

A limitation to the present study is the lack of traditional neuropsychological assessment measures employed. It is possible that future research may employ standard neurocognitive assessment batteries (e.g., Wisconsin Card Sorting Test) to aid in obtaining a more complete “neuropsychological profile” of sexual offenders. Another limitation of the present study is that it did not contain a sample of convicted female rapists. Although finding such a sample is quite rare, future research may benefit from studying this unique population.

The results of the present study suggest that the set of diagnostic criteria that is currently employed in categorizing male sex offenders may not be appropriate for the study of female offenders, in that males and females appear to differ significantly in terms of personality and neuropsychological clinical manifestations. Future research in this area should focus on further differentiating and specifying gender differences in the development and maintenance of sexual offending behaviour.

Author Note

Portions of this paper were presented at the 2002 annual meeting of the American Psychological Association (San Francisco, CA). Reprints and free copies of the CATI for research purposes may be obtained from: Professor Frederick L. Coolidge, PhD, P. O. Box 7150, Psychology Department, University of Colorado, Colorado Springs, CO 80933-7150. E-mail: fcoolidg@uccs.edu.
References


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