



# Psychopathy in women: Prediction of criminality and violence in UK and USA psychiatric patients resident in the community



Nicola S. Gray<sup>a,b</sup>, Robert J. Snowden<sup>c,\*</sup>

<sup>a</sup> Abertawe Bro Morgannwg University Health Board, Bridgend CF36 4LN, United Kingdom

<sup>b</sup> College of Medicine, Swansea University, Swansea SA2 8PP, United Kingdom

<sup>c</sup> School of Psychology, Cardiff University, Cardiff CF10 3AT, United Kingdom

## ARTICLE INFO

### Article history:

Received 10 July 2015

Received in revised form

16 December 2015

Accepted 7 January 2016

Available online 7 January 2016

### Keywords:

Women

Psychopathy

PCL-R

PCL:SV

Violence

Crime

## ABSTRACT

Psychopathy is an important clinical construct often used in the assessment and management of psychiatric patients and offenders. This, in part, is due to the strong association between psychopathy, crime, and particularly violent crime. However, there are few studies of these associations in women. These relationships were examined using information from two large databases. The Partnerships in Care database contains data from a sample of forensic psychiatric patients (154 women and 777 men) in the UK that were discharged from secure psychiatric units. Follow-up was via official conviction data within the next 2 years. The MacArthur study examined violence and aggression in a sample of civil psychiatric patients (367 women and 496 men) in the USA following discharge from an acute psychiatric hospital. Follow-up was via a mixture of self-report, informant report and official records. Psychopathy in both samples was measured via the PCL:SV prior to discharge. Psychopathy was a good predictor of target events for the women in both samples and for all time intervals used. No significant gender differences in the PCL:SV's predictive efficacy were found. The results provide a strong evidence-base for the use of psychopathy in women when considering future community behaviour and reoffending.

© 2016 Elsevier Ireland Ltd. All rights reserved.

## 1. Introduction

Psychopathy refers to a set of personality traits and behaviours that include callousness, lack of empathy, lack of remorse, impulsivity and antisocial acts. Levels of psychopathy are often used by clinicians to guide decision making in the management and treatment of offenders and patients, and is often used as an integral part of risk assessment. Indeed, Hart (1998) considers that “failure to consider it [psychopathy] may constitute professional negligence” (pp 133).

In clinical and forensic settings psychopathy is often measured via the Psychopathy Checklist (PCL-R; Hare, 2003). The PCL-R was developed for use on adult male incarcerated offenders. Given the importance of the concept of psychopathy, it is vital to see if it also functions similarly in other groups, such as in women. This is pressing given evidence that clinical evaluation of future risk may be particularly poor for female psychiatric patients (Skeem et al., 2005). Inappropriate use of the PCL-R and its derivatives may have human rights issues if it used to justify incarceration or the withholding of treatment.

There are reasons to suggest that the relationship between psychopathy and aggression might be different in women. Studies have demonstrated women have lower psychopathy scores (e. g., Nicholls et al., 2005), different underlying factor structures (e.g., Jackson et al., 2002), different aetiological pathways (e. g., Wynn et al., 2012), and different neuropsychological manifestations (e.g., Vitale and Newman, 2001). There is, therefore, a debate as to whether the concept of psychopathy is appropriate for women (e.g., Forouzan and Cooke, 2005) and whether the findings and knowledge obtained from studies on male psychopaths can be transferred to the female population.

The nature and motives for aggression perpetrated by women also differ from that of men (Archer, 2000). In particular, it has been suggested that women show less direct aggression, but more indirect aggression, than men (e.g., Bjorkqvist, 1994) and that their aggression is more often reactive in its nature (e.g., Miller and Lynam, 2006). In psychiatric patients, gender differences in rates of violence are less extreme, but more often results in serious injury (Robbins et al., 2003). Given the importance of psychopathy in violence risk assessment, the possible differences in the manifestation of psychopathy between women and men, and the differential nature and motives for aggression in women and men, it is natural to ask if psychopathy is also a valid predictor of aggression, and of other antisocial acts, in women as it is in men.

\* Corresponding author.

E-mail address: [snowden@cardiff.ac.uk](mailto:snowden@cardiff.ac.uk) (R.J. Snowden).

There have been a number of studies of psychopathy in women looking at the issue of whether the PCL is predictive of antisocial acts (Salekin et al., 1998; Nicholls et al., 2004; de Vogel and de Ruiter, 2005; Warren et al., 2005; Schaap et al., 2009; Coid et al., 2009; Eisenbarth et al., 2012; Lehmann and Ittel, 2012; Weizmann-Henelius et al., 2015). However, these studies have not been conclusive in defining the relationship between psychopathy and antisocial acts in women. Whilst some seem to show the validity of PCL (e.g., Nicholls et al., 2004), others have failed to find a significant relationship (e.g., de Vogel and de Ruiter, 2005) and others have even found the PCL score to be negatively related to the measures of violence (Warren et al., 2005). Hence, it has been suggested that “PCL-R in violence risk assessment with women should be approached with caution” (Falkenbach, 2008). However, many of these studies either tested a female sample with no male control, or did not have large enough samples to be able to compare performance directly between males and females. In contrast, Coid et al. (2009) studied a large sample of both men and women offenders due to be released from prison and tracked their future criminal career when released. They found that the PCL-R was an effective predictor of reconviction with little difference between men and women.

In the present study, we take advantage of two existing large clinical databases to examine whether the psychopathy is predictive of future antisocial acts in women psychiatric patients, and compare them to similar male patients. The first study examines forensic psychiatric patients discharged from medium secure facilities in the UK. The second examines civil psychiatric patients after an acute admission to hospital in the USA. Given the contradictory nature of previous research on the relationship between psychopathy and future antisocial behaviour in women, we did not make any *a priori* hypotheses about the nature of this relationship.

## 2. Method

The data used in the present analyses are taken from pre-existing databases that have been reported in previous publications (see references below). We present only a brief description in this paper.

### 2.1. Partnerships in Care (PiC) database

#### 2.1.1. Participants

The database contained data from 154 women and 777 men who had PCL:SV

**Table 1**  
Descriptive and inferential data for the PCL:SV.

	PiC study			MacArthur study		
	Male	Female	Cohen's <i>d</i>	Male	Female	Cohen's <i>d</i>
Total	7.43	5.97	0.29*	9.40	7.33	0.31*
Factor 1	3.56	2.62	0.31*	3.52	2.56	0.32*
Factor 2	4.02	3.45	0.20	5.87	4.80	0.33*
Superficial	0.20	0.06	0.28*	0.50	0.33	0.27*
Grandiose	0.24	0.06	0.34*	0.47	0.27	0.32*
Manipulative	0.32	0.36	-0.07	0.63	0.54	0.12
Lacks remorse	0.98	0.68	0.35*	0.58	0.42	0.23*
Lacks empathy	0.69	0.55	0.18	0.54	0.38	0.32*
DNA responsib	1.18	0.94	0.29*	0.79	0.61	0.24*
Impulsive	0.55	0.44	0.15	1.02	0.83	0.25*
Poor bev. con.	0.77	0.91	-0.16	0.88	0.80	0.10
Lacks goals	1.10	0.93	0.20	1.15	1.02	0.18
Irresponsible	0.58	0.73	-0.18	0.95	0.80	0.19
Adol. antisocial	0.31	0.08	0.40*	0.82	0.62	0.27*
Adult antisocial	0.70	0.34	0.44*	1.03	0.71	0.42*

\* Indicates significant differences between the genders ( $p < .01$ , one-tailed *t*-test).

scores. Mean age for the women was 32.5 years (range 17.3–68.3) and 31.9 years (range 17.3–68.3) and for the men. Overall, the sample self-described as “white” (68.4%), “black” (21.1%), “mixed” (2.9%), “asian” (2.8%), and “other” (0.4%), with 4.4% providing no classification. No significant gender differences in ethnicity were apparent.

### 2.1.2. Procedure

Ethical approval for the study was obtained from the Ethical Committee of the School of Psychology, Cardiff University. The database consists of information taken from a case note analysis of the files from people who had been discharged from one of four independent-sector medium-secure facilities in the UK. All lifetime convictions were obtained from the Home Office Offenders' Index (a UK Government database of all convictions), both prior to admission to hospital and following discharge. Convictions following date of discharge were classified as “outcome” data. All assessments were completed blind to outcome following discharge. Details of this database are available in other publications (Gray et al., 2008; 2011).

### 2.1.3. Measures

Psychopathy was measured via the Psychopathy Checklist: Screening Version (PCL:SV; Hart et al., 1995). The PCL:SV is a shorter version of the PCL-R and was designed for use outside of forensic settings (Hart et al., 1995). It consists of 12 items that produce a total score and a score for Factor 1 and Factor 2 (termed Part 1 and Part 2 in the manual). Factor 1 (Emotional Detachment) measures the interpersonal and affective components of psychopathy, while Factor 2 (Social Deviance) measures behavioural lifestyle and antisociality. The properties and factor structure of the PCL:SV were designed to mirror that of the PCL-R and empirical research supports the argument that they have extremely similar properties (Guy and Douglas, 2006; Walters et al., 2007).

The raters were trained on the PCL:SV by the current authors who are designated trainers via the Darkstone training programme (<http://www.hare.org/welcome/darkstone.html>). All ratings were made solely on the file information as these patients had already been discharged from the hospital.

Our outcome variable was the reconviction data obtained from the Home Office Offenders' Index. We did attempt to divide the convictions into violent versus others (see Snowden et al., 2007) but due to low base rates for violent reconviction among women such an analysis was not possible.

## 2.2. MacArthur study

Details of this study are available in detail elsewhere (Monahan et al., 2001), including its relationship to violence (Skeem and Mulvey, 2001) and legal and ethical issues (Monahan et al., 1993).

### 2.2.1. Participants

The study recruited patients who were civilly admitted to acute psychiatric hospitals at three sites in the USA. Patients were between 18–40 years of age and spoke English. In this paper we analyse data from 367 female and 496 male patients who had the PCL:SV completed. Mean age for the women was 29.9 years (range 18–40) and 29.8 years (range 18–40) for the men. Ethnicity was 69.1% white, 28.6% black, and 2.3% Hispanic, with no statistical differences between the genders.

### 2.2.2. Procedure

Over one thousand ( $N = 1136$ ) patients were interviewed for the baseline assessment (which took 4–6 h) where information about a variety of demographic, clinical and behavioural variables were collected. Patients were then contacted in the community at regular (10 week) intervals over the subsequent year after discharge. This follow-up also included an interview with a collateral informant. Three or more such interviews were obtained for 77.3% of the sample. Supplementary data were obtained from hospital and arrest records.

**Table 2**

Data relating to reconviction rates and their prediction by the PCL:SV for the PiC study.

		Reconviction – 1 year			Reconviction – 2 years		
		(%)	AUC	Z-score	(%)	AUC	Z-score
Total	Male	10.2 <sup>a</sup>	0.714*	-0.299	17.6 <sup>a</sup>	0.708*	0.291
	Female	6.5	0.739*		8.4	0.685*	
Part 1	Male		0.592*	-1.110		0.601*	-0.367
	Female		0.712*			0.639	
Part 2	Male		0.755*	0.328		0.750*	0.328
	Female		0.725*			0.726*	

\* AUC different from chance (0.50) at  $p < .01$ .

<sup>a</sup> Levels of reconviction differ  $p < .01$ .

**Table 3**  
Data relating to aggression and violence and their prediction by the PCL:SV for the MacArthur study.

		Aggression – 10 weeks			Violence – 10 weeks			Aggression – 50 weeks			Violence – 50 weeks		
		(%)	AUC	Z-score	(%)	AUC	Z-score	(%)	AUC	Z-score	(%)	AUC	Z-score
Total	Male	35.9	0.684 <sup>*</sup>	0.186	14.5 <sup>a</sup>	0.742 <sup>*</sup>	0.041	60.9	0.719 <sup>*</sup>	0.525	30.2 <sup>a</sup>	0.740 <sup>*</sup>	0.552
	Female	34.9	0.677 <sup>*</sup>		9.2	0.740 <sup>*</sup>		62.1	0.700 <sup>*</sup>		23.4	0.720 <sup>*</sup>	
Part 1	Male		0.641 <sup>*</sup>	–0.128		0.685 <sup>*</sup>	0.018		0.656 <sup>*</sup>	0.682		0.688 <sup>*</sup>	1.09
	Female		0.646 <sup>*</sup>			0.684 <sup>*</sup>			0.628 <sup>*</sup>			0.643 <sup>*</sup>	
Part 2	Male		0.683 <sup>*</sup>	0.586		0.752 <sup>*</sup>	0.410		0.725 <sup>*</sup>	0.497		0.739 <sup>*</sup>	0.216
	Female		0.662 <sup>*</sup>			0.732 <sup>*</sup>			0.707 <sup>*</sup>			0.731 <sup>*</sup>	

<sup>\*</sup> AUC different from chance (0.50) at  $p < .01$ .

<sup>a</sup> Levels of violence differ  $p < .01$ .

### 2.2.3. Measures

Psychopathy was measured via the PCL:SV. Raters had been trained on this instrument by two of the authors of the PCL:SV and ratings were based on patient interviews and official records.

The acts of aggressive behaviour recorded were divided into two categories related to seriousness: (1) violence was defined as acts that results in physical injury, sexual assaults or assaults that used a weapon, or threats with a weapon in hand, and (2) aggression was defined as other aggressive acts that did not meet the criteria for the violence category. Aggressive acts from all sources (self-report, informant report or official records) were independently rated by two trained coders to obtain a single reconciled report of the act (see Monahan et al., 2001). In the present study, we chose two intervals for analysis: the shortest (10 weeks following discharge) and longest (50 weeks following discharge) available in the database.

### 2.3. Analysis

The relationships between PCL:SV and outcome measures from both databases were analysed using Signal Detection Theory. Single Detection Theory is most often used in studies of predictive efficacy as it is relatively immune to changes in base rates and utilises the whole range of the instrument rather than a single “cut-off” score. We constructed the Receiver Operating Characteristic (ROC) for the PCL:SV and its factors and expressed performance via the area under the curve (AUC) (MacMillan and Creelman, 1991). Comparisons of AUCs were analysed via z-scores (Hanley and McNeil, 1982). Comparison of rates of violence was analysed using Fisher's Exact Test. All alpha levels were set to 0.01.

## 3. Results

### 3.1. PCL:SV scores

Table 1 shows the overall PCL:SV scores and factor scores in both samples. The pattern of results for gender differences is remarkably similar across the two studies. Men showed higher scores on the Total PCL:SV and on both Factor 1 and Factor 2 scores (although the difference on Factor 2 scores was not significant in the UK sample) with similar small effect sizes. On the individual items of the PCL:SV, men scored higher on Superficiality, Grandiosity, Lacks Remorse, Not Accepting Responsibility, Adolescent Antisociality, and Adult Antisociality in both samples, whilst the items Manipulative, Poor Behaviour Controls, Lacks Goals, and Irresponsibility did not differ significantly between the genders for both samples. Note that even the significant differences only produced small effect sizes between the genders (Cohen, 1992).

### 3.2. Psychopathy as a predictor of reconvictions in the Partnerships in Care sample

Table 2 presents the base rates for reconviction at both 1 and 2 years post-discharge. Overall, rates were quite low, but were significantly higher for men.

The PCL:SV was a significant predictor of reconvictions at both 1 and 2 years for women. Factor 2 was a significant predictor for both time intervals, whilst Factor 1 was only significant at the shorter time interval. Comparison of AUCs across genders did not

produce any significant difference for either total psychopathy scores or the two factors at both of the time intervals.

### 3.3. Psychopathy as a predictor of violence in the MacArthur sample

Table 3 illustrates the main results from our analyses. Overall, there was no difference in the rates of aggressive behaviour between women and men at either 10 or 50 weeks. However, men did commit more acts that were regarded as violent for both these follow-up periods (see Monahan et al. (2001) and Robbins et al. (2003) for further analysis of gender differences in rates of violence).

For women, the PCL:SV was a significant predictor of both aggression and acts of violence at both follow-up periods. Both Factor 1 and Factor 2 were significant predictors for both measures and at both time intervals<sup>1</sup>. Comparison of AUCs across genders did not produce any significant difference for either total psychopathy scores or the two factors on either outcome measure or at any time interval.

## 4. Discussion

The results from these two large-scale studies of criminality and aggressive acts for mentally disordered in the UK and civil psychiatric patients in the USA are unambiguous in showing that the PCL:SV is a valid predictor of these behaviours in women, with no significant difference in its efficacy to predict these behaviours compared to men. The results complement those of Coid et al. (2009) who showed that the PCL-R is a powerful predictor of reconviction in a sample of non-mentally disordered prisoners, irrespective of gender.

Given that these studies that have directly compared men versus women on the efficacy of the PCL have all shown no or little differences in its predictive abilities between the genders, it is of interest to briefly review studies that claim a gender difference in its performance. Prominent amongst these is the study of Warren et al. (2005) on women that showed that the PCL-R was not associated with violent crime and was even significantly *negatively* associated with an act of murder. The participants in this study were resident in a maximum-security prison for women and the associations calculated were with previous violence (not future violence). Diversion to such conditions of high-security is often associated with persistent problem behaviours within institutions, or is due to a very serious violence/murder that may have been a single act. The first route of persistent problem behaviours is strongly related to high psychopathy scores (Hobson et al., 2000)

<sup>1</sup> Differences in the efficacy of Factor 1 and Factor 2 are not considered here as the focus is on gender differences – the issue is covered by both Skeem and Mulvey (2001) and Monahan et al. (2001).

and is due to the many infractions and disruptive behaviours within the institution. The second route to high-security conditions, that of an act of extreme violence, is more commonly committed by non-psychopaths than psychopaths. For instance, [Woodworth and Porter \(2002\)](#) report that 73% of murders in a sample of Canadian offenders were not psychopathic. Note that this preponderance of non-psychopaths murderers over psychopathic murderers in these secure settings does not imply that psychopathy is not related to murder or extreme violence. High rates of psychopathy are, indeed, related to increased rates of murder (particularly of the instrumental type: [Woodworth and Porter, 2002](#); though also see [Cornell et al. \(1996\)](#)). The preponderance of non-psychopathic murderers in the prison/high security settings is simply due to the far larger number of non-psychopaths to psychopaths in the community in general. Hence, in a sample of offenders in high security we should expect to see many murderers who are non-psychopathic, and many persistently antisocial, difficult to manage offenders who are psychopathic. Hence, our psychopathy measure (such as the PCL-R) would appear to be negatively related to the measure of “previous murder”.

The study of [Warren et al. \(2005\)](#) did not have a male cohort control to which to compare the results from the women. If our explanation for the results from [Warren et al. \(2005\)](#) is correct, we might also expect a similar negative association between psychopathy and murder in a sample of men in high security. It would also suggest great care in the interpretation of the results from post-dictive designs (where current information is used to try to predict previous behaviour) and the need for truly predictive designs despite the great practical and ethical difficulties of such studies.

More recently, [Weizmann-Henelius et al. \(2015\)](#) examined the outcome of a small group ( $N=48$ ) of women discharged from prison or psychiatric hospital over a period of several years. They claim that their findings “*did not support the use of the PCL-R as a predictive instrument for assessing risk of violent recidivism in female offenders*” (pp 677), yet examination of the results show that the AUC for the PCL-R was 0.69 with the 95% confidence interval excluding chance levels. Hence, the predictive ability of PCL-R in their study appears similar to the estimates from the present paper and their result was statistically significant. We note that there was no male control group with which to compare the results from the women.

[Schaap et al. \(2009\)](#) examined a cohort ( $N=45$ ) of ex-patients over an unstated period of time and found that the PCL-R was a relatively poor predictor of both general and violent recidivism. However, the low base rate of violence (e.g., 16% violent reconvictions) combined with low sample size leads to these conclusions being based on very few individuals. It is also notable that a specialist risk assessment instrument, the HCR-20 ([Webster et al., 1997](#)), was also unable to predict either general or violent recidivism. Finally, there was no sample of men with which to compare these data.

The study of [de Vogel and de Ruiter \(2005\)](#) is also limited by a small sample size ( $N=42$ ), with 15 of these individuals also being part of the [Schaap et al., \(2009\)](#) sample, and the low base rate of violence. It found very poor prediction for the PCL-R for “violent outcomes” (a mixture of convictions after discharge and physical violence during the stay in hospital) with the HCR-20 also showing poor performance. However, this study also included a group of men that were matched on such things as age, index offence and type of psychopathology (Axes I and II), though we note that the women had a high preponderance of Borderline Personality Disorder, whereas the men had a high preponderance of Antisocial Personality Disorder. In the men, the PCL-R was a strong predictor of violent outcome, as was the HCR-20. Hence, this study does appear to provide evidence for differential performance of the PCL-R between men and women in this particular sample.

Taken together, it appears that there is strong evidence for the PCL-R and PCL:SV being predictive of antisocial outcomes in women, and very little evidence (the exception being [de Vogel and de Ruiter, 2005](#)) that it performs differently than it does in men. As such, the present findings support the use of PCL:SV in women as an important piece of information for the clinician when considering possible future antisocial and aggressive acts by the person. These findings add to the notion that the concept of psychopathy, as measured via the PCL-R and PCL:SV, is valid in women, and findings (e.g., about neuropsychology, treatment response, etc.) obtained in men should also be relevant to women.

#### 4.1. Limitations and strengths

A major strength of the study is the relatively large sample sizes in comparison to most previous studies of PCL-R and PCL:SV in women. However, even these large sample sizes are limited in power when attempting to study events with low base-rates such as violent reconvictions in women.

#### 4.2. Conclusions

In conclusion, the results here, and in other prospective studies (e.g., [Coid et al., 2009](#)) of reconvictions and violence whilst resident in the community, give a strong evidence-base for the effectiveness of PCL-based measurements of psychopathy when considering the management of civil psychiatric patients (MacArthur sample), forensic psychiatric patients (Partnerships in Care sample), and non mentally-disordered offenders ([Coid et al., 2009](#)) women.

#### Declaration of interest

None.

#### Acknowledgements

None.

#### References

- Archer, J., 2000. Sex differences in aggression between heterosexual partners: a meta-analytic review. *Psychol. Bull.* 126 (5), 651–680. <http://dx.doi.org/10.1037/0033-2909.126.5.651>.
- Bjorkqvist, K., 1994. Sex-differences in physical, verbal, and indirect aggression—a review of recent research. *Sex Roles* 30 (3–4), 177–188. <http://dx.doi.org/10.1007/bf01420988>.
- Cohen, J., 1992. A power primer. *Psychol. Bull.* 112, 155–159.
- Coid, J., Yang, M., Ullrich, S., Zhang, T.Q., Sizmur, S., Roberts, C., et al., 2009. Gender differences in structured risk assessment: comparing the accuracy of five instruments. *J. Consult. Clin. Psychol.* 77 (2), 337–348. <http://dx.doi.org/10.1037/a0015155>.
- Cornell, D.G., Warren, J., Hawk, G., Stafford, E., Oram, G., Pine, D., 1996. Psychopathy in instrumental and reactive violent offenders. *J. Consult. Clin. Psychol.* 64, 783–790.
- de Vogel, V., de Ruiter, C., 2005. The HCR-20 in personality disordered female offenders: a comparison with a matched sample of males. *Clin. Psychol. Psychother.* 12 (3), 226–240. <http://dx.doi.org/10.1002/cpp.452>.
- Eisenbarth, H., Osterheider, M., Nedopil, N., Stadtland, C., 2012. Recidivism in female offenders: PCL-R lifestyle factor and VRAG show predictive validity in a German sample. *Behav. Sci. Law* 30 (5), 575–584. <http://dx.doi.org/10.1002/bsl.2013>.
- Falkenbach, D.M., 2008. Psychopathy and the assessment of violence in women. *J. Forensic Psychol. Pract.* 8 (2), 212–224. <http://dx.doi.org/10.1080/15228930801964125>.
- Forouzan, E., Cooke, D.J., 2005. Figuring out la femme fatale: conceptual and assessment issues concerning psychopathy in females. *Behav. Sci. Law* 23 (6), 765–778. <http://dx.doi.org/10.1002/bsl.669>.
- Gray, N.S., Taylor, J., Snowden, R.J., 2008. Predicting violent reconvictions using the HCR-20. *Br. J. Psychiatry* 192, 384–387. Retrieved from < Go to ISI > ://000256106900014.

- Gray, N.S., Taylor, J., Snowden, R.J., 2011. Predicting violence using structured professional judgment in patients with different mental and behavioral disorders. *Psychiatry Res.* 187 (1–2), 248–253. <http://dx.doi.org/10.1016/j.psychres.2010.10.011>.
- Guy, L.S., Douglas, K.S., 2006. Examining the utility of the PCL: SV as a screening measure using competing factor models of psychopathy. *Psychol. Assess.* 18 (2), 225–230. <http://dx.doi.org/10.1037/1040-3590.18.2.225>.
- Hanley, J.A., McNeil, B.J., 1982. The meaning and use of the area under a receiver operating characteristic (ROC) curve. *Radiology* 143, 29–36.
- Hare, R.D., 2003. *The Hare Psychopathy Checklist-Revised (PCL-R)*, 2nd ed. Multi-Health Systems, Toronto.
- Hart, S.D., 1998. The role of psychopathy in assessing risk for violence: conceptual and methodological issues. *Leg. Criminol. Psychol.* 3, 121–137.
- Hart, S.D., Cox, D.N., Hare, R.D., 1995. *The Hare Psychopathy Checklist-Screening Version (PCL:SV)*. Multi-Health Systems, Toronto.
- Hobson, J., Shine, J., Roberts, R., 2000. How do psychopaths behave in a prison therapeutic community? *Psychol. Crime. Law* 6, 139–154.
- Jackson, R.L., Rogers, R., Neumann, C.S., Lambert, P.L., 2002. Psychopathy in female offenders – an investigation of its underlying dimensions. *Crim. Justice Behav.* 29 (6), 692–704. <http://dx.doi.org/10.1177/009385402237922>.
- Lehmann, A., Ittel, A., 2012. Aggressive behavior and measurement of psychopathy in female inmates of German prisons – a preliminary study. *Int. J. Law Psychiatry* 35 (3), 190–197. <http://dx.doi.org/10.1016/j.ijlp.2012.02.007>.
- MacMillan, N.A., Creelman, C.D., 1991. *Detection Theory: A User's Guide*. Cambridge University Press, vol. 98.
- Miller, J.D., Lynam, D.R., 2006. Reactive and proactive aggression: Similarities and differences. *Personal. Individ. Differ.* 41 (8), 1469–1480. <http://dx.doi.org/10.1016/j.j.paid.2006.06.004>.
- Monahan, J., Appelbaum, P.S., Mulvey, E.P., Robbins, P.C., Lidz, C.W., 1993. Ethical and legal duties in conducting research on violence: lessons from the MacArthur Risk Assessment Study. *Violence Vict.* 8 (4), 387–396.
- Monahan, J., Steadman, H.J., Silver, E., Appelbaum, P.S., Robbins, P.C., Mulvey, E.P., et al., 2001. *Rethinking Risk Assessment: The MacArthur Study of Mental Disorder and Violence*. Oxford University Press, USA.
- Nicholls, T.L., Ogloff, J.R.P., Brink, J., Spidel, A., 2005. Psychopathy in women: a review of its clinical usefulness for assessing risk for aggression and criminality. *Behav. Sci. Law* 23 (6), 779–802. <http://dx.doi.org/10.1002/bsl.678>.
- Nicholls, T.L., Ogloff, J.R.P., Douglas, K.S., 2004. Assessing risk for violence among male and female civil psychiatric patients: the HCR-20, PCL: SV, and VSC. *Behav. Sci. Law* 22 (1), 127–158.
- Robbins, P.C., Monahan, J., Silver, E., 2003. Mental disorder, violence, and gender. *Law Hum. Behav.* 27 (6), 561–571.
- Salekin, R.T., Rogers, R., Ustad, K.L., Sewell, K.W., 1998. Psychopathy and recidivism among female inmates. *Law Hum. Behav.* 22 (1), 109–128. <http://dx.doi.org/10.1023/a:1025780806538>.
- Schaap, G., Lammers, S., de Vogel, V., 2009. Risk assessment in female forensic psychiatric patients: a quasi-prospective study into the validity of the HCR-20 and PCL-R. *J. Forensic Psychiatry Psychol.* 20 (3), 354–365. <http://dx.doi.org/10.1080/14789940802542873>.
- Skeem, J., Schubert, C., Stowman, S., Beeson, S., Mulvey, E., Gardner, W., et al., 2005. Gender and risk assessment accuracy: underestimating Women's violence potential. *Law Hum. Behav.* 29 (2), 173–186. <http://dx.doi.org/10.1007/s10979-005-3401-z>.
- Skeem, J.L., Mulvey, E.P., 2001. Psychopathy and community violence among civil psychiatric patients: results from the MacArthur violence risk assessment study. *J. Consult. Clin. Psychol.* 69 (3), 358–374.
- Snowden, R.J., Gray, N.S., Taylor, J., MacCulloch, M.J., 2007. Actuarial prediction of violent recidivism in mentally disordered offenders. *Psychol. Med.* 37 (11), 1539–1549.
- Vitale, J.E., Newman, J.P., 2001. Response perseveration in psychopathic women. *J. Abnorm. Psychol.* 110 (4), 644–647.
- Walters, G.D., Gray, N.S., Jackson, R.L., Sewell, K.W., Rogers, R., Taylor, J., et al., 2007. A taxometric analysis of the psychopathy checklist: screening version (PCL: SV): further evidence of dimensionality. *Psychol. Assess.* 19 (3), 330–339.
- Warren, J.I., South, S.C., Burnette, M.L., Rogers, A., Friend, R., Bale, R., et al., 2005. Understanding the risk factors for violence and criminality in women: the concurrent validity of the PCL-R and HCR- 20. *Int. J. Law Psychiatry* 28, 269–289.
- Webster, C.D., Douglas, K.S., Eaves, D., Hart, S.D., 1997. *HCR-20: Assessing Risk of Violence (version 2)*. Mental Health, Law & Policy Institute, Simon Fraser University, Vancouver.
- Weizmann-Henelius, G., Virkkunen, M., Gammelgard, M., Eronen, M., Putkonen, H., 2015. The PCL-R and violent recidivism in a prospective follow-up of a nationwide sample of female offenders. *J. Forensic Psychiatry Psychol.* 26 (5), 667–685. <http://dx.doi.org/10.1080/14789949.2015.1049192>.
- Woodworth, M., Porter, S., 2002. In cold blood: characteristics of criminal homicides as a function of psychopathy. *J. Abnorm. Psychol.* 111, 436–455.