



# Impulsivity and psychopathy: Associations between the Barrett Impulsivity Scale and the Psychopathy Checklist revised

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## ARTICLE INFO

### Article history:

Received 11 May 2010

Received in revised form 1 September 2010

Accepted 2 February 2011

### Keywords:

Psychopaths

Psychopathy Checklist-revised (PCL-R)

Impulsivity

Barrett Impulsivity Scale (BIS-11)

## ABSTRACT

Impulsivity is often cited as a core dysfunction in those who are high in psychopathic traits. However, both impulsivity and psychopathy are both multi-faceted constructs. We examined a 3-factor model of self-reported impulsivity (Barrett Impulsivity: BIS-11) against the 2-factor and 4-facet model of psychopathy as defined by the Psychopathy Checklist-Revised (PCL-R). Those high on 'secondary psychopathy' (Factor 2 and Facets 3 and 4 of the PCL-R) showed increased impulsivity as it related to acting with thinking (Motor Scale of BIS) and lack of future planning (Non-Planning scale of BIS), but not did not show any elevated features of poor concentration or distraction (Attention Scale of BIS). On the other hand, there was some evidence that 'primary psychopathy' (Factor 1 of PCL-R) was associated with reduced impulsivity as it relates to future planning (Non-Planning scale of BIS). Thus, our results show that only some psychopaths show increased impulsivity and that not all forms of impulsivity are raised.

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## 1. Introduction

Psychopathy is one of the most important personality concepts within the fields of both clinical and forensic psychology and psychiatry. It is often conceptualised in terms of a combination of personality traits and socially deviant behaviours (e. g. Hare, 2003; Patrick, 2010). It appears to have some relation to the notion of Antisocial Personality Disorder (APD) as defined by DSM-IV, though the two are not synonymous. In particular, traditional and contemporary conceptualisations of psychopathy place greater emphasis on the personality traits, whilst these are relegated to associated features in the DSM-IV diagnosis of APD (for discussions see Hare, 2003).

Psychopaths are typically described as having the traits of callousness, insincerity, a lack of anxiety and an impulsive nature. It is this last trait, that of 'impulsiveness' that is the focus of this paper. Some previous research has shown that impulsivity appears to be a core feature of psychopathic individuals (Blackburn and Coid, 1998), and is contained in older conceptualisations (e. g., Craft, 1965). However, certain findings in the research literature do not seem to fit easily with the notion that psychopaths are marked by impulsive behaviour. For example, Woodworth and Porter (2002) examined cases of murder and classified them as either cold-blooded (planned) or hot-blooded (reactive/impulsive). Whilst the murderers defined as psychopaths committed both types of homicide, they were responsible for nearly all the cold-blooded killings. Hence, this result seems

to point towards a planned and deliberate risk taker, rather than an impulsive reactor (see also Cima and Raine, 2009; Vitacco et al., 2009). Despite these behaviours, and the prolific offending histories that are often associated with some psychopathic individuals, it appears that psychopathic individuals have a great proficiency in persuading others of their good intentions and that they should be released from secure settings (Porter et al., 2009). Again, this ability does not seem to match the idea of someone who is impulsive or reactive. Likewise, many clinicians find it hard to reconcile the calculating and carefully planned manipulative behaviours that they encounter from some psychopathic individuals with the notion of the reactive behaviours and lack of planning that the notion of high impulsivity implies.

### 1.1. Varieties of psychopathy

One possible reason for the apparent lack of impulsivity in some psychopaths lays in the notion that psychopathy is not a unitary concept. For many years there has been the notion that psychopathic individuals can be classified into 'primary and secondary psychopaths' (Karpman, 1948; Lykken, 1957). Primary psychopaths are thought to be low in anxiety and fear, and have low sensitivity to cues for harm, punishment or non-reward. Conversely, secondary psychopaths are thought to be over-sensitive to cues of punishment or reward and therefore can overreact to situations. So thus conceptualised, it would appear that the concept of impulsivity is most likely associated with the secondary psychopath and not the primary variety. A common modern method of defining psychopathy is the Psychopathy Checklist-Revised (PCL-R; Hare, 2003). Harpur et al. (1998) also found that this instrument had two factors and there appears to be a reasonable

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match between these two factors and the notion of the primary and secondary psychopath (see Hicks et al., 2004).

More recently, there have been attempts to subdivide the notion of psychopathy even further, with 3-factor (Cooke and Michie, 2001) and 4-factor (or facets as they are referred to in order to distinguish them from the two factors; Hare, 2003) models being proposed. This latter four factor model has 'facets' of (1) *Interpersonal*, which reflect the person's interactions with others which are often superficial, grandiose and deceitful, (2) *Affective*, which reflect the person's poverty of emotions, empathy and remorse, (3) *Lifestyle*, which reflect the person's impulsive, irresponsible and unfocussed lifestyle, and (4) *Antisocial*, which reflect their criminal and antisocial behaviours. In this paper we adopt a four-facet approach derived from the PCL-R as it appears that the four-facet model includes the three-facet model whilst maintaining a measure of antisocial behaviour (facet 4) that includes criminal behaviours.

## 1.2. Varieties of impulsivity

A cursory reading of the literature that relates to impulsivity shows that it includes a wide-range of theoretical constructs, behaviours and traits (Enticott and Ogloff, 2006; Evenden, 1999; Reynolds et al., 2006). It can also be measured using a variety of techniques ranging from an individual's self-report of their behaviours and attitude, through to laboratory-based tasks. One example of the self-report measure is the Barratt Impulsiveness Scale (BIS). BIS has a long history (Stanford et al., 2009) and has undergone many revisions. In its current form (BIS-11; Patton et al., 1995) it consists of 30 items that are responded to on a 4-point scale. As well as providing an overall impulsivity score the BIS provides scores on 3 factors. The 'Attention' factor reflects poor concentration and thought intrusions, the 'Motor' factor reflects acting without thinking, and the 'Non-planning' factor indeed reflects a lack of future planning. This 3-factor solution has been explored in many populations and there are reports of both successes in replicating this structure (Stanford et al., 2009), and failures to replicate this structure often resulting in two-factor solutions. For example, Haden and Shiva (2008) found a two-factor solution in a sample of male forensic inpatients, with factors they termed Motor Impulsiveness and Nonplanning impulsiveness, though these were not identical to those within the 3-factor solution of Patton et al. (1995). We note that many other scales and studies also provide for a multi-factor view of the concept of impulsivity (e. g., Whiteside and Lynam, 2001).

Despite the importance of the concept of impulsivity to the concept of psychopathy there have been remarkably few studies of impulsivity as defined by the BIS and psychopathy as defined by the PCL. The one exception to this is the study of Jackson et al. (2007). In this study they administered the screening version of the PCL (PCL-SV<sup>1</sup>; Hart et al., 1995) as well as the BIS-11 to a subsample of the MacArthur Violence Risk Assessment Study (Monahan et al., 2001). This sample consisted of civil psychiatric patients. Using a structural equation model they found significant associations for all four facets of the PCL for the Caucasian sample, though the fits were far stronger for facets 3 and 4 than for facets 1 and 2. For the African American sample the associations were much weaker for all facets, and only those for facets 3 and 4 achieved statistical significance. Therefore, these results support the notion that only certain aspects of psychopathy are associated with impulsivity, but that this might vary across samples. Unfortunately, Jackson et al. did not present data for the different factors of impulsivity.

In the present study we aimed to examine the relationship between the factors of psychopathy and those of the BIS. We hypothesised that increased impulsivity would be associated with

**Table 1**  
Descriptive statistics of sample.

	Mean (S.D.)	Range
Age (years)	34.3 (9.3)	21–66
NART IQ	97.6 (15.2)	69–126
Duration since admission (days)	56.6 (54.8)	3–411
Previous convictions	12.9 (10.6)	1–79
PCL-R total (0–40)	21.5 (8.6)	5–39
Factor 1 (0–16)	8.2 (4.3)	0–16
Factor 2 (0–18)	10.3 (4.8)	0–18
Facet 1 (0–8)	3.5 (2.5)	0–8
Facet 2 (0–8)	4.7 (2.4)	0–8
Facet 3 (0–10)	5.4 (3.0)	0–10
Facet 4 (0–10)	5.9 (3.2)	0–10
BIS total	71.8 (11.9)	44–104
BIS attention	17.6 (3.5)	10–26
BIS motor	26.8 (5.4)	16–43
BIS nonplanning	27.5 (5.5)	14–42

high scores on Factor 2 of the PCL-R, and with Facet 3 (Lifestyle) and Facet 4 (Antisocial). We also entertained the possibility that high Factor 1, and in particular Facet 1 (Interpersonal), scores might be associated with low impulsivity scores. Consideration of the BIS scales suggests that these relationships to the PCL-R scores should be present for the Motor and the Nonplanning scales, but not for the Attention scale as there is no indication that psychopathy is related to poor concentration and/or thought intrusions.

## 2. Method

All experimental protocols and data collection methods were given ethical permission by both Grendon Prison Research and Advisory Committee and the Ethical Committee of the School of Psychology, Cardiff University. All participants gave written informed consent to participate in the experimental procedures, the clinical interviews and for the researchers to have full access to their prison records.

### 2.1. Participants

Participants were recruited from a specialist Category B prison<sup>2</sup> (Her Majesty's Prison Grendon, UK), run as a therapeutic community. All offenders were adult male serious and/or repeat offenders who had been diagnosed as having a Personality Disorder by a psychiatrist using ICD-10 criteria (a requirement for admission to the therapeutic community). All inmates were maintained free from psychotropic medication as it was thought to interfere with the prisoner's ability to benefit from therapy and was against the rules of the institution. All consecutive admissions within a 22-month period (September 2000–June 2002) were invited to participate in the study ( $n = 147$ ).

Of the original 147 admissions, 16 people refused to participate, 5 people completed the BIS but refused to complete the PCL-R interview, and 1 person did not participate due to illiteracy. This study reports data from 125 offenders who completed both the BIS and PCL-R (85% of those invited to participate).

Of these remaining 125 participants, 109 (87%) classified themselves as "white", 11 (9%) as "black" and 5 (4%) as "other". All were male with an average age of 34.2 years (see Table 1 for further details of the sample).

### 2.2. Procedure and materials

*Psychopathy Checklist-Revised* (PCL-R; Hare, 1991) measures a common kernel of personality traits that can define the disorder of psychopathy. It consists of a 20-item evaluation of psychopathy that incorporates both interview assessments and file-based information. Each of the 20 items are scored on a three point scale from 0 to 2, where a score of 0 indicates that the item is not present for the individual; a score of 1 indicates that it may be present but that the evidence available is not strong enough to warrant a score of 2; and a score of 2 indicates that the item is definitely present. The possible range of scores on the PCL-R is therefore 0–40. The higher the score obtained the nearer the individual is to the prototypical psychopath. The PCL-R has good inter-rater reliability (for male offenders  $ICC_1 = 0.86$ ; Hare, 2003). The PCL-R has also been

<sup>1</sup> Research suggests that the PCL-R and the PCL:SV measure the same concepts at both total and factor levels (Guy and Douglas, 2006).

<sup>2</sup> UK prisons are divided into 4 categories: Category A is for prisoners whose escape would be highly dangerous to the public or national security, Category B is for prisoners who do not require maximum security, but for whom escape needs to be made very difficult, Category C is for prisoners who cannot be trusted in open conditions but who are unlikely to try to escape, and Category D is for prisoners who can be reasonably trusted not to try to escape, and are given the privilege of an open prison.

validated for UK offenders, and there appears to be little difference in how PCL-R scores relate to the latent trait of psychopathy in this sample compared to N. American samples (see Hare, 2003; pp 205–209).

PCL-R scores were obtained via an interview and review of all collateral information (e.g., prison records, psychiatric records, criminal records). The two individual raters who supplied ratings for the present investigation were all fully trained in the administration and scoring of the PCL-R and had taken an accredited training course. For 17 of our offenders we obtained ratings from two raters and interclass correlations were very high ( $R_{\text{total}} = 0.98$ ).

*Barrett Impulsivity Scale* (BIS-11; Patton et al., 1995) was administered via a self-report questionnaire. This has 30 questions, each of which required the respondent to choose between 'Rarely/Never', 'Occasionally', 'Often' and 'Almost Always'. Items are scored from 1 to 4. The BIS-11 has good internal consistency (Cronbach's  $\alpha = 0.83$ ) and test-retest reliability (Spearman's  $\rho = 0.83$ ) – Stanford et al., 2009).

*National Adult Reading Test* (NART – Nelson, 1982) is a test of reading that is a widely accepted and is commonly used in clinical settings for estimating premorbid intelligence levels of English-speaking patients that is related to other measures of IQ.

### 3. Results

#### 3.1. Descriptive statistics of sample

Descriptive statistics of the sample are shown in Table 1. Seventy nine (62.5%) of the sample had determinate sentences, whilst the remaining 46 (36.8%) had life sentences. A consideration of index offence showed that murder/manslaughter was most common (27, 21.6%), followed by rape (19, 15.2%), robbery (19, 15.2%), theft (16, 12.8%), grievous bodily harm (14, 11.2%), indecent assault (9, 7.2%), paedophilia (7, 5.6%), and arson (6, 4.8%), with 8 (6.4%) in other categories. Most offenders self-reported that they were currently single or divorced (93, 74.4%), whilst 23 (18.4%) were either married or cohabiting. We did not get this information for 9 (7.2%) offenders.

#### 3.2. Relationship between PCL-R and BIS

Table 2 illustrates the zero-order correlations between the psychopathy and the impulsivity measures. At the global level there was no significant relationship between PCL-R Total score and BIS-11 Total score. Total PCL-R score was not, however, associated with the Attention nor the Non-Planning component of impulsivity but was significantly correlated with the Motor factor.

At the Factor level the results showed that there were no associations with impulsivity for Factor 1, whilst there was a significant relationship for Factor 2 (of a moderate effect size). Factor 2 was associated with both the Non-planning and Motor factors of BIS, but not with the Attention factor. Many studies have found a relationship between the two Factors of psychopathy, and our data was in line with this ( $r = 0.39, p < 0.001$ ) and thus this covariance may cause associations with external variables to be missed due to suppressor effects (Hicks & Patrick, 2006). Therefore, we looked at the associations between Factor 1 and BIS whilst controlling for Factor 2. Interestingly, all the association coefficients now became negative and that for Non-planning reached statistical significance ( $r = -0.21, p < 0.05$ ). A similar analysis for Factor 2 whilst controlling for Factor 1 produced just a modest increase in the associations between Factor 2 and the Motor and Non-planning factors of the BIS.

**Table 2**  
Correlations between the measures of impulsivity and psychopathy.

		BIS-11			
		Total	Attention	Motor	Nonplanning
PCL-R	Total	0.14	0.01	0.19*	0.15
	F1	-0.05	-0.02	-0.03	-0.07
	F2	0.26**	0.05	0.28***	0.31***
	Facet1	-0.04	-0.02	-0.00	-0.05
	Facet2	-0.03	0.01	-0.02	-0.07
	Facet3	0.27**	0.09	0.32***	0.26**
	Facet4	0.19*	0.00	0.22**	0.25***

\*  $p < 0.05$ ; \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

At the facet level the results showed that neither facets 1 and 2 showed any relation to the BIS scores. Both facets 3 and 4 showed a similar pattern of results with no relation to the Attention component of the BIS but significant associations to the Non-planning and Motor factors with a moderate effect size (Cohen, 1988).

We did not find any significant effect of IQ score on BIS-II impulsivity scores ( $r_s$  for Total =  $-0.08$ ; Attention =  $-0.07$ ; Motor =  $-0.06$ ; Planning =  $-0.10$ ), and controlling for IQ in a partial correlation did not alter the pattern of results described above for the zero-order correlations. Likewise, we did not find any effects of age on BIS-II impulsivity scores ( $r_s$  for Total =  $-0.05$ ; Attention =  $-0.11$ ; Motor =  $-0.02$ ; Planning =  $-0.08$ ), and controlling for age in a partial correlation did not alter the pattern of results described above for the zero-order correlations.

### 4. Discussion

Our results show that the relationship between psychopathy and impulsivity (at least when measured through the PCL-R and the BIS) is not simple, but depends upon what aspects of psychopathy and impulsivity are being assessed. Our major finding is that psychopathy as defined by Factor 2 of the PCL-R (and in turn both facets 3 and 4) are associated with an increased impulsivity in the domains of the Non-planning and Motor factors. On the other hand our data point to a decreased impulsivity for the domain of Non-planning when aspects related to Factor 1 are isolated. Thus, our 'primary' and 'secondary' psychopaths may relate to the concept of impulsivity in quite different, even contrary, ways.

Our data are supportive of the notion that secondary psychopaths (e.g., those high on Factor 2 scores) have an impulsivity that is related to acting without thinking (Motor factor) and in a lack of 'futuring' or forethought (Non-planning factor). Such types of impulsive behaviours are in line with the idea that such individuals may be prone to get into trouble with the law and other social norms (Facet 4 (Antisocial) of the PCL-R) and with a lifestyle that is chaotic and unstable (Facet 3 (Lifestyle) of the PCL-R). On the other hand, these secondary psychopaths did not show any dysfunction in the ability to focus attention and concentration (Attention factor). Hence, it appears that not all aspects of impulsivity are raised in these individuals. In contrast, the primary psychopaths (e.g., those high on Factor 1 scores) did not show any signs of raised impulsivity. Indeed, the only significant finding to emerge was that this Factor may actually be related to an increased level of planning. Such a finding seems to gel with many clinical reports of the ability of some psychopathic individuals to devise and carryout (often devious) plans such as those related to manipulating others for their needs or to smooth their way through the criminal justice system (Hakkanen-Nyholm & Hare, 2009).

#### 4.1. Limitations

The major limitation of the present study is that our measure of impulsivity was achieved through self-report. Clearly, there are many limitations to this due to an inability to know oneself and the problem of deliberate efforts to present oneself in a positive light (which may be particularly acute in a population high in psychopathic traits), or even in a negative light. Whilst most studies of impulsivity have used the self-report method (e.g., Kosson et al., 1990; Hall et al., 2004; Ray et al., 2009) there is a pressing need to find other measures, such as laboratory based ones, to compliment such self-report. However, at present the extant data do not seem to suggest that such laboratory measures are able to tap impulsivity as defined by the self-report measures (see for example Dolan & Fullam, 2004; Janis & Nock, 2009; Reynolds et al., 2006). We also note that specific nature of our sample (adult male prisoners with a personality disorder, the vast majority of which were white) means that future work is needed to test if similar results are found in other populations.

## 4.2. Conclusions

Impulsivity is an important core concept to psychopathy but it appears that there are large differences between the impulsive nature of the secondary psychopath against the planful nature of the primary psychopath. Such large differences need to be managed in quite different manners by those that provide care to such individuals and in considerations of management and release etc. For example, Dolan and Fullam (2004) note that offenders with low trait impulsivity were more prone to instrumental violence, whilst those with high trait impulsivity were more prone to reactive violence. More work is needed to provide measures of impulsivity that are less reliant on self-report and that can then be used to monitor levels of impulsivity so as to provide unbiased indicators of therapeutic change (or deterioration).

## Acknowledgements

This work was supported by a grant from the Wales Office of Research and Development for Health and Social Care, and from the Virtual Institute for the study of Severe Personality Disorder. We thank the staff and prisoners of HMP Grendon for the assistance in running these experiments.

## References

- Blackburn, R., Coid, J., 1998. Psychopathy and the dimensions of personality disorder in violent offenders. *Personality and Individual Differences* 25, 129–145.
- Cima, M., Raine, A., 2009. Distinct characteristics of psychopathy relate to different subtypes of aggression. *Personality and Individual Differences* 47, 835–840.
- Cohen, J., 1988. *Statistical Power Analysis for the Behavioural Sciences*, 2nd Ed. Erlbaum, Hillsdale, NJ.
- Cooke, D.J., Michie, C., 2001. Refining the construct of psychopathy: towards a hierarchical model. *Psychological Assessment* 13, 171–188.
- Craft, M.J., 1965. *Ten studies into psychopathic personality*. John Wright, Bristol, England.
- Dolan, M., Fullam, R., 2004. Behavioural and psychometric measures of impulsivity in a personality disordered population. *Journal of Forensic Psychiatry and Psychology* 15, 426–450.
- Enticott, P.G., Ogloff, J.R.P., 2006. Elucidation of impulsivity. *Australian Psychologist* 41, 3–14.
- Evenden, J.L., 1999. Varieties of impulsivity. *Psychopharmacology* 148, 348–361.
- Guy, L.S., Douglas, K.S., 2006. Examining the utility of the PCL:SV as a screening measure using competing factor models of psychopathy. *Psychological Assessment* 18, 225–230.
- Haden, S.C., Shiva, A., 2008. Trait impulsivity in a forensic inpatient sample: an evaluation of the Barratt Impulsiveness Scale. *Behavioral Sciences & the Law* 26, 675–690.
- Hakkanen-Nyholm, H., Hare, R.D., 2009. Psychopathy, homicide and the courts. *Working the System. Criminal Justice and Behavior* 36, 761–777.
- Hall, J.R., Benning, S.D., Patrick, C.J., 2004. Criterion-related validity of the three-factor model of psychopathy. *Assessment* 11, 4–16.
- Hare, R.D., 1991. *The Hare Psychopathy Checklist - Revised*. Multi-Health Systems, Toronto.
- Hare, R.D., 2003. *The Hare Psychopathy Checklist - Revised (PCL-R)*; 2nd Edition. Multi-Health Systems, Toronto.
- Harpur, T.J., Hakstian, R., Hare, R.D., 1998. Factor structure of the psychopathy checklist. *Journal of Consulting and Clinical Psychology* 56, 741–746.
- Hart, S.D., Cox, D.N., Hare, R.D., 1995. *The Hare Psychopathy Checklist - Screening Version (PCL:SV)*. Multi-Health Systems, Toronto.
- Hicks, B.M., Patrick, C.J., 2006. Psychopathy and negative emotionality: analysis of suppressor effects reveals distinct relations with emotional distress, fearfulness, and anger-hostility. *Journal of Abnormal Psychology* 115, 176–187.
- Hicks, B.M., Markon, K.E., Patrick, C.J., Krueger, R.F., Newman, J.P., 2004. Identifying psychopathy subtypes on the basis of personality structure. *Psychological Assessment* 16, 276–288.
- Jackson, R.L., Neumann, C.S., Vitacco, M.J., 2007. Impulsivity, anger, and psychopathy: the moderating effect of ethnicity. *Journal of Personality Disorders* 21, 289–304.
- Janis, I.B., Nock, M.K., 2009. Are self-injurers impulsive? Results from two behavioral laboratory studies. *Psychiatry Research* 169, 261–267.
- Karpman, B., 1948. The myth of the psychopathic personality. *The American Journal of Psychiatry* 104, 523–534.
- Kosson, D.S., Smith, S.S., Newman, J.P., 1990. Evaluating the construct validity of psychopathy in black and white male inmates. *Journal of Abnormal Psychology* 99, 250–259.
- Lykken, D.T., 1957. A study of anxiety in the sociopathic personality. *Journal of Abnormal and Social Psychology* 55, 6–10.
- Monahan, J., Steadman, H.J., Silver, E., Appelbaum, P.S., Robbins, P.C., Mulvey, E.P., Roth, L.R., Grisso, T., Banks, S., 2001. Rethinking risk assessment: the MacArthur study of mental disorder and violence. Oxford University Press, USA.
- Nelson, H., 1982. *National Adult Reading Test (NART) Manual*. NFER-Nelson, Winsor.
- Patrick, C.J., 2010. Conceptualizing the psychopathic personality: disinhibited, bold, or just plain mean. In: Lynam, D.R., Salekin, R.J. (Eds.), *Handbook of child and adolescent psychopathy*. Guilford Press, New York.
- Patton, J.H., Stanford, M.S., Barratt, E.S., 1995. Factor structure of the Barratt impulsiveness scale. *Journal of Clinical Psychology* 51, 768–774.
- Porter, S., ten Brinke, L., Wilson, K., 2009. Crime profiles and conditional release performance of psychopathic and non-psychopathic sexual offenders. *Legal and Criminological Psychology* 14, 109–118.
- Ray, J.V., Poythress, N.G., Weir, J.M., Rickelm, A., 2009. Relationships between psychopathy and impulsivity in the domain of self-reported personality features. *Personality and Individual Differences* 46, 83–87.
- Reynolds, B., Ortengren, A., Richards, J.B., de Wit, H., 2006. Dimensions of impulsive behavior: personality and behavioral measures. *Personality and Individual Differences* 40, 305–311.
- Stanford, M.S., Mathias, C.W., Dougherty, D.M., Lake, S.L., Anderson, N.E., Patton, J.H., 2009. Fifty years of the Barratt Impulsiveness Scale: An update and review. *Personality and Individual Differences* 47, 385–395.
- Vitacco, M.J., Van Rybroek, G.J., Rogstad, J.E., Yahr, L.E., Tomony, J.D., Saewert, E., 2009. Predicting short-term institutional aggression in forensic patients: a multi-trait method for understanding subtypes of aggression. *Law and Human Behavior* 33, 308–319.
- Whiteside, S., Lynam, D.R., 2001. The five factor model and impulsivity: using a structured model of personality to understand impulsivity. *Personality and Individual Differences* 30, 669–689.
- Woodworth, M., Porter, S., 2002. In cold blood: characteristics of criminal homicides as a function of psychopathy. *Journal of Abnormal Psychology* 111, 436–455.