



## Attention deficit hyperactivity disorder and critical incidents in a Scottish prison population

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### ABSTRACT

There is a well-documented association between ADHD symptoms and antisocial behaviour. The relationship between ADHD symptoms and critical incidents within a Scottish prison was investigated. A total of 198 serving prisoners were screened for both childhood and adult ADHD symptoms using the DSM-IV checklist of symptoms (DCS). Antisocial personality disorder (ASDP) was measured by the MCMI-III and used as a covariate. Behavioural problems in prison were determined using a measure of recorded critical incidents over a period of three months, including verbal and physical aggression, damage to property, self-injury, and severity of aggression. Functional impairment was determined by extreme number of critical incidents. Forty eight (24%) of the prisoners met DCS criteria for childhood ADHD, of whom 11 (23%) were fully symptomatic, 16 (33%) in partial remission and 21 (44%) in full remission. The 27 participants who were fully symptomatic or in partial remission of symptoms, had significantly more aggressive incidents and were more functionally impaired in terms of their behaviour than those participants who were symptom free, after controlling for ASPD. Symptomatic prisoners, including those in partial remission, engaged in extreme incidents in terms of both frequency and severity. It is important to identify and treat prisoners who remain symptomatic for ADHD.

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### 1. Introduction

Several studies have reported an association between antisocial behaviour and adults with attention deficit hyperactive disorder (ADHD) (Babinski, Hartsough, & Lambert, 1999; Brassett-Grundy & Butler, 2004; Satterfield, Swanson, Schell, & Lee, 1994). Despite this, there have been only a few published studies investigating the prevalence of ADHD in adult prison populations and none have specifically explored the association of ADHD symptoms with behaviour in this restricted environment (Dalteg, Lindgren, & Levander, 1999; Eyestone & Howell, 1994; Gudjonsson, Sigurdsson, Einarsson, Bragason, & Newton, 2008; Rasmussen, Almvik, & Levander, 2001; Vitelli, 1995). These five studies suggest that approximately 50% of inmates had childhood ADHD and of those about half met full or partial remission criteria for ADHD in adulthood.

Fazel and Danesh (2002) found that when compared with the general population in America and the United Kingdom, prisoners had about a ten fold excess of antisocial personality disorder (ASPD). They found a prevalence rate of 65% for ASPD, which is similar to the 50–75% reported in studies carried out within the United States penal system (Singleton, Meltzer, Gatward, Coid, & Deasy, 1997). In addition to conduct problems in childhood and antisocial personality disorder in adulthood, substance misuse is strongly associated with adult ADHD, but this may only occur when there is co-morbid antisocial behaviour (Lynskey & Hall, 2001).

Children with ADHD are at risk of the development of psychiatric problems, conduct disorder, and antisocial personality disorder (Brassett-Grundy & Butler, 2004; Young, Gudjonsson, Ball, & Lam, 2003). In a meta-analysis of 20 studies, a strong relationship was found between ADHD measures and criminal/delinquent behaviour (Pratt, Cullen, Blevins, & Unnever, 2002). Lynam (1996) argues that children with ADHD, and who have conduct problems, are at a high risk of becoming psychopathic in adulthood and chronic offenders. The antisocial behaviour of people with ADHD seems to be mediated by poor behavioural control (Barkley, 1998), which suggests that they would be likely to display more critical

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incidents within a prison environment. Indeed, their behavioural problems may become exacerbated once they are incarcerated in prison where deficits of behavioural control and cognitive function related to ADHD may result in an increased level of inconsistent and unacceptable behaviour (i.e. critical incidents, including verbal and physical aggression).

The principal aim of this study was to investigate whether partial, as well as full symptoms, are associated with behavioural problems in the prison after controlling for the effects of ASPD.

## 2. Method

### 2.1. Participants

A total of 198 male offenders incarcerated in Aberdeen prison responded to adverts placed in the prison and consented to take part in the study (mean age = 30.0, SD = 8.2). The ethnic background of the participants was known in 194 cases, of which 184 (95%) were white Europeans. The index offences were theft/burglary/deception ( $n = 63$ , 32%), assault/murder/armed robbery ( $n = 50$ , 25%), traffic violations ( $n = 47$ , 24%), drugs ( $n = 23$ , 12%), arson ( $n = 3$ , 1%), sex ( $n = 2$ , 1%) and others ( $n = 10$ , 5%). On arrival at the prison, 182 (92%) participants had one or more previous convictions.

Aberdeen prison is located in the city of Aberdeen Council Area and is the local prison for the northeast of Scotland and Northern Isles. The prison's capacity is designed to hold 154 prisoners, mostly male, but is often subjected to up to 50% overcrowding (Scottish Executive, 2004). The prison holds various categories of prisoners including males on remand (i.e. in prison awaiting trial), convicted and short-term sentenced prisoners, prisoners under the age of 21, some convicted long-term prisoners and, at the time of data collection, some females. Of the 198 offenders in the sample only six were on remand. Exclusion criteria included participants who were female, had not served at least three months for the current sentence, were mentally too unwell to participate as judged by the prison officers, and those who had participated in the study on a previous admission (i.e. they were re-admissions to the prison).

### 2.2. Measures

#### 2.2.1. Diagnostic statistical manual-IV checklist of symptoms (American Psychiatric Association, 1994)

The DSM-IV checklist of symptoms (DCS, American Psychiatric Association, 1994) is an 18 item self-report questionnaire consisting of statements relating to symptoms of ADHD, and directly corresponds with DSM-IV criteria (American Psychiatric Association, 1994). Nine items relate to problems with inattention and nine items relate to problems with hyperactivity-impulsivity. In addition to categorizing frequency of symptoms, each item was scored on a 3-point rating scale (0, never; 1, sometimes and 2, often). Participants completed the questionnaire twice, once self-reporting on childhood symptoms and again reporting on symptoms in the last six months.

For the purpose of this study, childhood criteria for DSM-IV ADHD were applied using these data: six or more inattentive items (rated as 'often') or six or more hyperactive/impulsive items (rated as 'often'). ADHD in adulthood was classified into the following types: (1) *ADHD/predominantly inattentive type (PIT)* indicated by classification of childhood symptoms for ADHD plus current symptoms indicated by a score of six or more inattentive items rated as 'often' on the DCS, (2) *ADHD/predominantly impulsive/hyperactive type (PIH)* indicated by classification of childhood symptoms for ADHD plus current symptoms indicated by a score of six or more

hyperactivity/impulsiveness items (rated as 'often') on the DCS and (3) *ADHD/combined type* indicated by classification of childhood symptoms for ADHD plus current symptoms indicated by a score of six or more inattentive items (rated as 'often') and six or more impulsive/hyperactive items (rated as 'often') on the DCS.

If there was no classification in childhood then there was no classification in adulthood. For those classified in childhood but who did not fulfil criteria for full symptomatology in adulthood, we applied the following criteria for ADHD in partial and full remission: (1) *ADHD in partial remission (IPR)* indicated by a classification of ADHD in childhood, plus a total score of  $\geq 17$  for symptoms in the last six months on the DCS. A score of 17 represents one standard deviation above the mean score obtained by a normal population (Young, 1999) and (2) *ADHD in full remission (IFR)* indicated by a classification of ADHD in childhood, plus a total score of  $< 17$  for symptoms in the last six months on the DCS.

#### 2.2.2. The Millon clinical multi-axial inventory-III (MCMI-III) (Millon 1997)

The MCMI-III is a 175-item true-false inventory comprising a total of 24 clinical scales derived from Millon's theory of personality, and paralleling DSM-III and DSM-IV axis I and II diagnostic categories. These include 11 basic personality scales, three pathological personality disorder scales representing greater levels of personality pathology, and ten clinical syndromes scales. The MCMI-III was chosen because it has a reliable and valid scale for measuring antisocial personality disorder (ASPD), which is of particular relevance to the present study. As recommended in the manual, a base rate score of 85 or higher was used as diagnostic screening of ASPD.

#### 2.2.3. Critical incidents

Critical incidents were obtained from prison records completed by staff for the previous three-month period. They were classified as incidents of verbal aggression, physical aggression, damage to property, self-injurious, arson and 'other' behaviours and were recorded and allocated a score of one point per incident (regardless of type). The sum total represented the critical incident total score. This was based on a measure used in a previous study (Young et al., 2003). In addition, the severity of each physical aggression incident was rated by applying the following point system:

- No threat or physical violence.
- A threat of physical violence without violence being inflicted.
- Violence is inflicted but no injury is detectable on examination by a doctor and there is no significant pain.
- Significant pain, bruising or laceration.
- Any assault producing an injury that requires further hospital investigation (e.g. X-ray, staff being sent off duty).

#### 2.2.4. Functional impairment

We were also interested in the rates of severe impairment in the ADHD and non-ADHD groups. For the purpose of this study we defined this as the presence of inappropriate and disruptive behaviour determined by the measure of critical incidents. Impairment was operationalised by selecting an arbitrary category of the top 10% of the entire sample for any one of the four domains of critical incidents (i.e. verbal aggression, physical assault, property damage and self-injury). If there was impairment in any one of these domains then a participant was recorded as impaired. With regard to verbal aggression this accounted for those participants who had  $\geq 20$  verbal incidents recorded, for physical aggression  $\geq 2$  incidents, for damage to property  $\geq 2$  incidents, and for self-injury  $\geq 1$  incident.

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