Impulsivity in Patients With Borderline Personality Disorder

Jonathan Dowson, Evangelos Bazanis, Robert Rogers, Andrew Prevost, Pamela Taylor, Clive Meux, Christopher Staley, David Nevison-Andrews, Celia Taylor, Trevor Robbins, and Barbara Sahakian

This study investigated features of impulsivity in patients with borderline personality disorder (BPD) using the self-report Attention-Deficit Scales for Adults (ADSA) and computer-administered neurocognitive tasks. Forty-one patients with DSM-III-R BPD and 35 nonclinical control subjects were assessed by the ADSA, the National Adult Reading Test, and two computerized tasks mediated by the frontal lobes. Mean scores for seven ADSA scales (six of which relate to aspects of impulsivity) were significantly higher in the patient group compared with the control group. Also, the ADSA ratings for impaired coordination were increased in the BPD patients. The findings indicate that a range of aspects of impulsivity, as well as impaired coordination, are associated with patients selected on the basis of BPD. Also, in the patient group, but not in the control group, associations of the neurocognitive tasks indicated that, first, performance on a planning task related to dorsolateral frontal lobe functioning is correlated with aspects of impulsivity reflected by ADSA scale III ratings (involving disorganisation and lack of perseverance) and, second, performance on a decision-making task related to orbitofrontal functioning is correlated with ratings of impaired coordination. Further work is needed to establish the specificity of the findings.

IMPULSIVITY is a dysfunctional characteristic associated with several psychiatric disorders, in particular, borderline and antisocial personality disorders (BPD,APD), attention-deficit/hyperactivity disorder (ADHD), mania, and substance-related disorders.[1-4] One definition of impulsivity, "a lowered threshold for motoric actions, particularly aggressive behavior, in response to environmental stimuli,"[5] encompasses some examples of important behaviors in clinical practice, namely, relatively unpremeditated aggressive behavior directed to self or others in the context of BPD or APD. Another definition, "a predisposition toward rapid, unplanned reactions to internal or external stimuli without regard to the negative consequences of these reactions to the impulsive individual or to others,"[4] is more complex and several factors are also reflected in Daruna and Barnes' definition[6] i.e., "actions that appear poorly conceived, prematurely expressed, unduly risky or inappropriate to the situation and that often result in undesirable consequences." Furthermore, impulsivity has been considered to consist of several variably co-occurring factors with separate neurobiological substrates[2]; for example, Patton et al,[7] using the Barratt Impulsiveness Scale, provided evidence for six first-order factors which yielded the three second-order factors of "attentional impulsiveness," involving impaired focusing on the task in hand with extraneous and racing thoughts; "motor impulsiveness," involving rapid response to stimuli and lack of perseverance; and "nonplanning impulsiveness," involving impaired ability to plan with disorganization and a lack of enjoyment of challenging mental tasks. Therefore, a wide range of characteristics have been considered to be examples of impulsivity in various contexts. In addition to the above, these have included acting without thinking about negative consequences; a rapid emotional response involving impatience, irritability, anger, or aggression; and taking undue risks.[1,2,7-11]

BPD, as defined by the Diagnostic and Statistical Manual of the American Psychiatric Association (Third Edition-Revised or Fourth Edition, DSM-III-R and DSM-IV),[12,13] includes several criteria related to the features of impulsivity as described above. Also, the BPD criterion of "recurrent suicidal behavior, gestures or threats, or self-mutilating behavior" has been regarded as indicating impulsivity in the setting of BPD,[1,14] as this often involves a low threshold for action and a rapid reactivity of mood, in particular anger.

The self-report Attention-Deficit Scales for Adults (ASDA)[15] was used in the present study to assess aspects of impulsivity in patients with BPD,

From the Departments of Psychiatry, Experimental Psychology, and Public Health and Primary Care, University of Cambridge, Cambridge; Department of Psychiatry, University of Oxford, Oxford; Institute of Psychiatry, London; Broadmoor Hospital, Crowthorne; St. Andrew's Hospital, Northampton; and Kneesworth Hospital, Royston, UK.

Address reprint requests to Jonathan Dowson, M.D., Ph.D., University of Cambridge, Department of Psychiatry, Box 189, Addenbrooke's Hospital, Cambridge, CB2 2QQ UK.

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as it appears to have good face validity in relation to the range of characteristics considered to indicate impulsivity and, in comparison with the Barrett Impulsiveness Scale, has more items and incorporates a scale related to rapid emotional response, which is an important clinical characteristic of BPD. The ASDA scales include items related to focusing on the task in hand, lack of perseverance, lack of organization, educational performance, rapid response to stimuli with marked reactivity of mood, risk taking, and aggression. Furthermore, the ADSA has been validated by showing significant associations with a group of patients with a diagnosis of adult ADHD.[15] (As previously noted, both BPD and ADHD are associated with impulsivity.[16,17])

The present study investigated patients with BPD by comparing ADSA self-ratings in a patient group with those of a nonclinical control group. Also, for the BPD patients and control subjects, associations were investigated between ADSA ratings and performance on two neurocognitive tasks that appear to reflect aspects of impulsivity and are mediated by frontal lobe functions.

Frontal lobe functions are of particular relevance to impulsivity[4,18-20]; for example, the dorsolateral frontal cortex is activated in tasks involving planning and the inhibition of behavior, which appear to relate to some of the main characteristics of impulsivity as noted above.[21-23] Also, performance on a decision-making "gambling" task (involving speed and quality of decision-making, and risk-taking behavior) has been shown to involve a neural network that includes the orbitofrontal cortex.[18] Moreover, various neurocognitive deficits that are compatible with frontal lobe dysfunctions have been reported in patients with BPD,[24-33] as well as in patients with APD, which often co-occurs with BPD and is also associated with impulsivity.[34-37] The present study assessed performance on neurocognitive tasks that appear to reflect aspects of impulsivity and have been shown to be associated with dorsolateral and orbitofrontal frontal lobe functioning.[18,38-41]

The present study examined the hypotheses that ratings on ADSA scales related to impulsivity are increased in patients with BPD compared with nonclinical controls and that patients' ADSA ratings show associations with neurocognitive performances that appear to be related to aspects of impulsivity.

METHOD

Subjects

The study involved UK inpatients and outpatients, aged 18 to 50 years, in a general psychiatry service for an urban catchment population and in three hospitals that accept inpatient referrals from other catchment areas. Potential subjects in the selected clinics and units, without a history of "psychosis" or recent substance-use disorder, were initially identified by inspection of case records and evaluated further if they had a personality disorder diagnosis and/or a history of behaviors characteristic of BPD as defined by DSM-III-R. (DSM-III-R criteria were used because the study began before DSM-IV was available.) Further details of the selection criteria for the patients and nonclinical control subjects have been reported previously.[42] The patients received a diagnosis of DSM-III-R BPD using the Structured Clinical Interview for DSM-III-R Personality Disorder (SCID-II).[43]

The study was approved by the Cambridge Local Research Ethics Committee and the Ethics Committees of Broadmoor Hospital, St. Andrew's Hospital, and Kneesworth House Hospital. Characteristics of the subject groups are shown in Table 1.

There were no significant differences between the patient and the control groups in relation to mean age ($t = -1.0$, df 74), mean estimated IQ ($t = -1.6$, df 74), or gender (χ^2; $P = .49$).

Methods

Patient and control subjects were assessed with the SCID-II interview for DSM-III-R BPD and the SCID-II interview for APD,[43] as these personality disorders commonly co-occur in psychiatric settings.[44,45] Also, subjects were assessed with the National Adult Reading Test (NART),[46] which estimates premorbid Wechsler Adult Intelligence Scale (WAIS) fullscale IQ, the Modified Overt Aggression Scale (MOAS) in relation to past episodes of aggression,[47] a semistructured interview for past psychiatric history and current medication, and the Brief Symptom Inventory (BSI).[48] The 53-item BSI reflects psychological symptom patterns in various settings, and provides a "Global Severity Index" (GSI) by which "caseness," involving clinically significant symptoms, has been associated with a threshold of 0.6 for males and 0.8 for females. The SCID interview was administered by an experienced psychiatrist, and, for the combined criteria for BPD and APD, i.e., for all 30 individual personality disorder criteria (for BPD and APD for each subject), satisfactory levels of inter-rater reliability (i.e., $\kappa > 0.75$ per subject),[49] had been previously established with another experienced psychiatrist for positive (threshold) or non-threshold ratings.

As aggression is a characteristic of the syndrome of BPD, the MOAS was used to provide further identification of the characteristics of the sample by rating the most serious past acts of autoaggression and aggression to others by the subject after the age of 18, each of which was rated between 1 and 4.[47]

Aspects of impulsivity were assessed by the ADSA,[15] a self-report instrument with 54 statements, each rated as never/seldom/sometimes/often/always and then scored between 1 and 5. Twenty-five of the questions contribute to the ratings for