

Summaries

Justitiële verkenningen (Judicial explorations) is published nine times a year by the Research and Documentation Centre of the Dutch Ministry of Justice in cooperation with Boom Juridische uitgevers. Each issue focuses on a central theme related to judicial policy. The section *Summaries* contains abstracts of the internationally most relevant articles of each issue. The central theme of this issue (nr. 8, 2006) is *Biology and criminology*.

Criminology, biology and the amygdala's central position

W. Buikhuisen

In this article the author discusses the outcomes of recent biomedical research on the relationship between neurobiological characteristics and (aggressive and antisocial) behaviour. Two central questions are being dealt with: how can the correlations found be explained and what is the criminological significance of these findings? The author describes the formation of the human conscience and the punishment and reward mechanisms involved in learning social rules and norms. In this process a properly functioning amygdala is of crucial importance, which is then illustrated and further explained in an analysis of recent research findings on psychopathy and ADHD. Making a rigid distinction between biological and social variables when studying serious forms of criminal behaviour is artificial, the author stresses. He proposes a multidisciplinary approach in which criminologists, psychobiologists, brain researchers and geneticists work closely together.

Antisocial and aggressive behaviour; recent developments in neurobiological research

A. Popma, L.M.C. Jansen, R. Vermeiren and Th.A.H. Doreleijers

During the past two decades, research on the role of biologic factors in antisocial behaviour has made great progress. In current research models these biological factors are considered to interact with social factors in a complex fashion. In this article, recent findings are reported from studies performed in the Netherlands on the relationship between cortisol, the main human stress hormone, and antisocial behaviour in juveniles. The results of these studies indicate reduced cortisol variation and stress reactivity in

delinquent boys with a psychiatric disruptive behaviour disorder, as compared to a normal control group. Implications for future forensic assessment and treatment, as well as directions for future research are being discussed.

The biology of the psychopath

D.J.L.G. Schutter and J. van Honk

Psychopathy is characterized by a lack of fear that promotes reward driven behaviour as well as aggression. Furthermore, physiological studies have demonstrated that psychopathy is associated with hyporesponsivity to threat signals and reduced punishment avoidance. Results from human brain studies have provided evidence for functional and structural abnormalities in the prefrontal cortex-amygdala circuit, and the involvement of steroid hormones. Particularly the frequently observed hypoactive prefrontal cortex may provide new leads in the development of alternative treatments of psychopathy, such as transcranial magnetic stimulation, a technique capable of increasing cortical brain functions. Despite the rapid increase in the understanding of brain functions, the exact biological mechanisms associated with psychopathic behaviour remain elusive. As a result, the predictive value of biological factors in psychopathy is limited and unravelling the determinants of psychopathy constitutes an important challenge to the biological sciences.

Addiction: a relapsing chronic brain disease

W. van den Brink

The author starts with a sketch of the views on addiction and addicts over the past 200 years. In the last decennia increasing knowledge from brain research lead to a tendency to perceive addiction as a brain disease and the addict as a patient. Some people – partly through a genetical predisposition – are more prone to experience addictive substances as rewarding than others and some people are more in need for psychotropic substances to combat stress related complaints than others. The underlying brain mechanisms of this phenomenon are being described in this article. Through frequent use of addictive substances, long-lasting and possibly even everlasting changes within the brain occur. Consequently, for the person involved, the addictive substance becomes an even more important source of reward than before. This explanation doesn't

rule out psychological and social aspects of addiction, but provides a neurobiological counterpart.

First soup, then the Gospel; on the relationship between food and behaviour

A. Zaalberg

There is a growing interest in the relationship between diet and behaviour. Long neglected, even denied for a long time by social scientist, this intriguing relationship is developing rapidly in the field of psychiatry, psychology and criminology. In this article some recent theories are discussed, starting with a theory of the Palaeolithic origin of the human diet and its relation to diseases and behavioural disturbances in our modern society. The importance of the role of fatty acids, minerals and vitamins will be emphasized. Some recent correlational and longitudinal studies as well as several RTC's are presented. These studies range from psychiatry, to developmental psychology and criminology. Although the picture is rather diffuse, and practical applications are still far away, there are enough encouraging preliminary results. Possible applications for the future are discussed, especially in the field of crime prevention and aggression reduction in prisons, clinics for the mentally disturbed offenders and youths.

Oxytocin and the neurochemicals of social bonding

K. de Kogel

In this short paper some recent neurobiological studies of human social bonding and possible implications of this type of research are discussed. A growing number of studies investigate the role of oxytocin and other neuropeptides in the development of the ability to form and maintain social bonds, and the behavioural and neurobiological consequences if this development is disturbed by early neglect. Another study shows that oxytocin may even promote 'trust' in partners in a simulated investment transaction. The social sciences dominate the study of human social behaviour. It is questionable whether these incorporate sufficient levels of measurement. Integrating biological knowledge is likely to teach us more about the mechanisms of human social behaviour and may help to create more efficient strategies of diagnosis, prevention and intervention.

Predictive and preventive criminology

M. Schermer

Biosocial research into criminal behaviour bears a promise of future applications like screening, prevention and perhaps even medical treatment of criminal predispositions. One of the effects of biosocial behavioural research is the blurring of the line between criminality and disease. This article briefly reviews the current developments in biosocial research and the possible future applications of this research, and evaluates them by comparing them with the existing practices of screening and prevention in medicine. The advantages and drawbacks of screening- and prevention programmes as they have been identified in bioethical literature are discussed and compared to possible predictive and preventive criminological uses. Next, the position of biosocial criminology within a 'culture of control' is discussed. It is concluded that, by and large, the developments fit into this culture, although there are some ambivalences. Concrete measures resulting from biosocial research will have to be evaluated from a moral point of view, taking the broader social developments into account.