

# Justitiële verkenningen

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## Psycho-biological factors and aggressive behaviour

### Summaries

Justitiële verkenningen (Judicial exploration) is published nine times a year by the Research and Documentation Centre of the Dutch Ministry of Justice in cooperation with the publishing house Gouda Quint BV. Each issue focuses on a central theme related to criminal law, criminal policy and criminology. This section contains abstracts of the more relevant articles.

#### **The aggression gene and other misconceptions**

A.G. Donker

There are some common misconceptions about biological studies on behaviour, most of them about heredity or genes. Five of these misconceptions are subject of this article. Firstly, it is often taken for granted that biological research into behaviour is about heredity. Most biological studies on criminality, however, do not involve genetics. Secondly, all biological factors are considered to be genetically determined. Biological factors are far more diverse than only genetic factors and much more intertwined with social factors than usually thought of. Many social factors have biological influences and vice versa. Thirdly, studies on the heredity of criminality supposedly involve the search for criminal genes. Criminal genes do not exist. An estimation of the size of the genetic influence is the target of these studies. The fourth misconception is the alleged discovery of the 'aggression-gene'. The fifth concerns genetic determinism. Genes do not determine behaviour. Genetic influence is probabilistic.

#### **Genetic influences on anti social behaviour; possibilities and restrictions of research**

D.J. Hessing

In this article the possibilities and impossibilities of studies into the genetic influences on antisocial behaviour are discussed. After making a distinction between criminal behaviour and antisocial behaviour, different aspects of the heritability of antisocial behaviour such as the influence of genes on behaviour, the interaction between genes and environment, shared and non-shared environment and the possible genetic influence of the environment on behaviour are analyzed. The possible causal influence of genetic factors, related to the influence of environmental factors, is discussed in the framework of the heuristic model for violence of Raine, Brennan e.a. (1997). Finally, attention is given to the limitations surrounding behavioral-genetic studies into antisocial behaviour and the limitations of genetic explanations of behaviour with regard to environmental influences, leading to the conclusion that the genetic make-up of an individual does not directly lead to specific behaviour, given the complex interactions between genes and behaviour.

#### **ADHD; a disorder questioned**

E.M. Scholte and J.D. Ploeg

Attention deficit with hyperactivity (ADHD) is the most common disorder of child-hood. It is, how-e-ver, also the one of the most mysterious disorders. To clarify the mystification surrounding ADHD this article discusses the notion of ADHD, and the causes and correlates of the disorder. ADHD is often caused by biological factors, but the behavioral symptoms of ADHD can also be cau-sed or reinfor-ced by poor family and rearing conditions. The disorder is often associated with co-morbid problems, like antisocial and aggressive behavioral pro-blems. However, comor-bi-dity cannot be equated with causality. The issue whether ADHD causes delinquency is un-re-solved. Children behaving chaotically, impulsively or hyperactively easily run the risk to be diagnosed as 'ADHD' because of their lively behaviour, while actually, other problems are important. It is therefore recom-mended to check always first the detrimental effect of other possible risk-factors carefully before reaching the diagnosis 'ADHD'.

## **Antisocial and aggressive behaviour; an overview of literature on neurobiological research**

D. Matser and Th.A.H. Doreleijers

Neurobiological factors are important for regulating aggression. This article aims to provide an insight into the regulatory mechanisms of aggression and antisocial behaviour that may lead to delinquency, mainly based on studies conducted in children and adults. In adolescents little research is done to investigate these mechanisms. This review focuses on the neurotransmitter serotonin, the hormones cortisol and testosterone and on the neurophysiological factors heart rate and skin conductance activity. The levels of serotonin and testosterone and the reactivity of cortisol during stress turned out to be of considerable importance for the development of conduct disorders. Although delinquency and conduct disorder are different concepts, the outcome of factors influencing these behaviours are most likely related. Further research should be done to clarify this relationship. It may serve as an improvement of supplementary treatment modalities.

## **Anti social conduct of children; a neuro biological perspective**

S.H.M. van Goozen, W. Matthys and H. van Engeland

When antisocial behavior becomes a persistent pattern that affects diverse domains of children's functioning, one refers in psychiatry to an oppositional-defiant disorder (ODD) or a conduct disorder (CD). Research shows that in the absence of effective interventions, the prognosis for CD/ODD children and young adolescents is relatively unfavourable: their disorder can extend into adolescence, manifest itself in delinquency, and convert into other psychiatric symptoms, such as addiction. Although environmental factors have traditionally received most attention in explaining the origin and persistence of CD/ODD, it is important not to overlook the vulnerability of the child in the development of antisocial behavior. In this respect, relatively few studies have been conducted on the neurobiological factors involved in CD/ODD children. We present Gray's bio-psychological theory of brain function and discuss its hypothesis that CD/ODD has its biological foundation in an imbalance between the Behavioral Activating System and the Behavioral Inhibition System. Findings, from our own studies and those of others, supporting the neurochemical, psychophysiological and behavioral assumptions of the BIS/BAS theory are presented. Finally data from animal studies are presented showing how stress in general and adverse early life experiences in particular have an impact on the development of the serotonergic and stress systems. It is our firm belief that an investigation of the neurobiological factors involved in antisocial behavior disorder might ultimately indicate which are beneficial ways to intervene.

## **Treatment of disruptive behaviours; how important are biological factors?**

N.W. Slot and H.M.P. van Leeuwen

There is a growing interest from the side of clinicians for biological factors in diagnostics and treatment. This is especially the case when it comes to treatment of disruptive behaviours such as Attention-Deficit Hyperactivity Disorder, Conduct Disorder, Oppositional Defiant Disorder and antisocial behaviour in early maturing girls. Neuropsychological assessment focuses on brainfunctions that are supposed to play an important role in the aetiology of disruptive behaviors. Among those, the so called executive functions are getting more and more attention. These functions include inhibition and planning. Two common fallacies with respect to biology and treatment are mentioned: the assumption that biological causation implies non-reversibility of symptoms, and the idea that medication is imperative whenever a biological cause seems probable. In the article different types of training and treatment are described that have resulted in a reduction of symptoms. These interventions include: behaviour therapy, cognitive behavioral interventions, groupwise social skills training, parent management training, mediation therapy and multi systemic therapy. Medication is usually being used in combination with psychological treatment. Medication as a single treatment may have detrimental effects.

## **A bio psychological approach of psychopathy; perspectives for the tbs-field**

C.H. de Kogel

In the Dutch forensic psychiatric field plans are made for the selection of a common set of psychological measurement instruments for diagnosis, treatment evaluation and risk assessment of violent behaviour. One of the concepts of interest is psychopathy. However, psychopathy is known as

being extremely difficult to treat. Starting to use instruments to measure psychopathy and assess risk of violent recidivism, would imply responsibility to (further) develop modes of treatment for individuals who receive unfavorable scores on such instruments. Results from biopsychological research may be helpful here. In this article, biopsychological research with respect to psychopathy and impulsive aggression is reviewed. It is argued that a biological approach in addition to the in the tbs-field traditionally more habitual psychological and social approaches, is of value for the diagnosis and treatment of forensic patients with psychopathy or other personality disorders. With respect to treatment, examples are incorporation of knowledge about information processing deficits of psychopaths in treatment programs and pharmacological treatment of impulsive aggressive behaviour. With respect to diagnosis and treatment evaluation a combination of biological and psychological measurements would lead to a more valid assessment of forensic psychiatric patients than relying only on the latter.