Conduct Disorder - Psychopathy

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# Conflict of Interest  Jan Buitelaar

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ANTI SOCIAL BEHAVIOUR
SEE IT REPORT IT STOP IT
“I am not quite sure what I would call that expression, but I know that is what people look like just before you stab them”
So what's happening? Theories on why resting heart rate is low ….
History
Developmental Model of Aggression

Birth
- Prenatal smoking
- Prenatal alcohol
- Obstetric problems

Childhood
- Abuse, neglect
- Parental rejection
- Inconsistent parenting, harsh discipline
- Parental psychopathology

Adolescence
- Insufficient parental supervision
- Poor neighborhood, deviant peer group

Adulthood

Environmental RISKS

Genes
- Temperament, IQ, pro-social skills
- Arousal mechanisms

Socialization
1. Conditioning, sensitivity to punishment
2. Control mechanisms
3. Empathy, moral reasoning
Taxonomy of aggression

Psychopathic traits:
1. Callous-unemotional
2. Impulsivity
3. Narcissism

Impulsive versus Instrumental aggression

Early versus Late Onset
Common Misconceptions about DBDs (1)

- Disruptive behaviours refer to annoying problem behaviours that are just a matter of inadequate parenting
Common Misconceptions about DBDs (1)

• Disruptive behaviours refer to annoying problem behaviours that are just a matter of inadequate parenting

• WRONG: Disruptive behaviours can be the result of a psychiatric disorder that requires psychiatric input into careful evaluation and treatment planning
Common Misconceptions about DBDs (2)

- Disruptive behaviour is a reactive syndrome that is due to adverse environmental (family) influences
Common Misconceptions about DBDs (2)

• Disruptive behaviour is a reactive syndrome that is due to adverse environmental (family) influences

• WRONG: Individual biological and psychological vulnerabilities play an important part in the pathogenesis
Common Misconceptions about DBDs (3)

• Treatment of the symptoms associated with disruptive behaviors has a rather gloomy prognosis; investment in evaluation and treatment is a waste of time, money and energy
Common Misconceptions about DBDs (3)

• Treatment of the symptoms associated with disruptive behaviors has a rather gloomy prognosis; investment in evaluation and treatment is a waste of time, money and energy.

• WRONG: Disruptive behaviours persist in 30–50% of the cases into adulthood as antisocial personality disorder, but (partially) remit in many other cases; treatment may make a difference.
What Are Conduct Disorders?

Conduct Disorder

- Repetitive pattern of anti-social behaviour
- Significant impairment in the ability to function at school, at work or in social situations
- Typically involving the violation of rules and the rights of others
- Lasting more than 6 months
CD: Areas of Dysfunction

- Aggression
- Destruction of property
- Deceitfulness/theft
- Serious violation of rules
Conduct Disorder

• When a child seriously misbehaves with aggressive or non-aggressive behaviours against people, animals or property that may be characterised as belligerent, destructive, threatening, physically cruel, deceitful, disobedient, or dishonest. This may include stealing, intentional injury, and forced sexual activity
Oppositional Defiant Disorder

• If a child’s problem behaviours do not meet the criteria for Conduct Disorder, but involve a pattern of defiant, angry, antagonistic, hostile, irritable, or vindictive behaviour, this mental disorder of childhood may be diagnosed. These children may blame others for their problems.
Differential Diagnosis

- Oppositional Defiant Disorder vs. Conduct Disorder
- Attention-Deficit/Hyperactivity Disorder (ADHD)
- Mood Disorder
- Posttraumatic Stress Disorder
- Pervasive Developmental Disorder
- Psychotic Disorder
- Intermittent Explosive Disorder
- Reactive Disorder/Adjustment Disorder
- Organic Disorder
- Normal Variation
Common Comorbidities

• Attention-Deficit/Hyperactivity Disorder (50%)
• Mood Disorder (30%)
• Substance Abuse (in adolescence 10–20%)
• Specific Learning Disorders (30–50%)
Prevalence

- Prevalence among children and adolescents is estimated between 1.5% and 6%.
- More common in boys\(^1\)
- Some evidence suggests that prevalence may increase to 25-50% in children with lower IQs\(^2,3\)

Onset and Precursors

(Precursors of) ODD-ADHD

<4 yr

4–7 yr

ODD(+ADHD)

8–10 yr

ODD

11–18 yr

Remission

CD Childhood onset

CD Childhood onset

CD Adolescent onset
Long-term Prognosis of CD

- Psychiatric status
  - 30–50% antisocial personality disorder
  - Alcohol and drug abuse
  - Anxiety and depressive symptoms
  - Hospitalisation
- Criminal behaviour
  - Driving while intoxicated, violent crimes
Subtyping of Aggression
Subtypes based on age at onset

- Conduct Disorder, Childhood-Onset Type: onset of at least one criterion characteristic of Conduct Disorder prior to age 10 years
- Conduct Disorder, Adolescent-Onset Type: absence of any criteria characteristic of Conduct Disorder prior to age 10 years
- Conduct Disorder, Unspecified Onset: age at onset is not known
## Summary of the characteristics of different aggression subtypes

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<tr>
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<th>Impulsive aggression</th>
<th>Instrumental aggression</th>
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<tr>
<td><strong>Age of onset</strong></td>
<td>Childhood</td>
<td>Childhood</td>
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<tr>
<td><strong>Severity of aggression and violence</strong></td>
<td>Situation-dependent, reactive</td>
<td>High + persistent</td>
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<tr>
<td><strong>Persistence into adulthood</strong></td>
<td>++</td>
<td>+++</td>
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<td><strong>Abnormal temperament/personality</strong></td>
<td>Impulsive, emotional dysregulation, distressed by effects on others</td>
<td>Fearless, thrill-seeking, less anxious, less responsive to punishment, distress in others, lack of guilt</td>
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<td><strong>Role of family instability</strong></td>
<td>+</td>
<td>++</td>
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<td><strong>Rebelliousness</strong></td>
<td>++</td>
<td>++</td>
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<tr>
<td><strong>Callous-unemotional (C/U) traits</strong></td>
<td>+</td>
<td>+++</td>
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<td><strong>Neuropsychological deficits</strong></td>
<td>Cognitive and emotional regulation, executive control</td>
<td>Deficits in processing emotional stimuli &amp; low reactions to fear and distress</td>
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<td><strong>Role of parenting factors</strong></td>
<td>High levels of hostile and inconsistent parenting</td>
<td>Less related to parenting style</td>
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<td><strong>Familial risks</strong></td>
<td>Genetic factors and environment</td>
<td>Mainly genetic factors</td>
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Child Population: CD: 6-16% boys

Adult Population: APD: 1% UK Males
49% sentenced prisoners, UK

% Offences
Psychopathy traits: Childhood

**Antisocial Process Screening Device (APSD; 6-13)**
Teacher and Parent Questionnaire (Frick & Hare, 2001)

**Psychopathy Checklist: Youth Version (12-18)**
Semi structured interview + File information (Forth, Kosson, & Hare, 2003)

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**Callous-Unemotional Traits**

( = Affective-interpersonal domain of adult psychopathy)

- Lack of empathy
- Lack of guilt
- Insincere charm/manipulative

**Antisocial-impulsive domain**

- Gets angry if does not get what he wants
- Engages in illegal activities
- Difficulties in sustaining goal-directed activity
Subtype / qualifier: “with callous-unemotional presentation”

- Lack of Remorse or Guilt
- Callous-Lack of Empathy
- Unconcerned about Performance
- Shallow or Deficient Affect

- 2 or more out of 4
- persistently over at least 12 months
- in multiple relationships and settings
- multiple information sources are necessary
Predictive value of CU traits?

- More severe, aggressive, and stable AB than in children w/o CU (Frick & Morris, 2004)

- View aggression as rewarding (Pardini et al., 2003)

- Longitudinal studies found CU traits can distinguish youth who will develop severe and persistent forms of AB, even after accounting for prior CD severity (e.g. Frick, Cornell et al., 2003; Frick et al., 2005; Loeber et al., 2005; Pardini, 2006).

- Re-offend more often and have more violent re-offences (Forth, Kosson, & Hare, 2003)
Lower sensitivity for punishment

Does not learn from punishment and negative feedback
CU traits: Reduced autonomic reactivity to distress in others (Blair et al., 2006)

- Difficulties in processing fear and sadness of others (e.g. Blair et al., 2001)
- Skin conductance response to fear and sadness almost absent in children and adults (Blair et al., 2006)
- Normal skin conductance response to other emotions (Blair et al., 2006)
• **Insensitivity to punishment**
  – Classical conditioning tasks show poor modulation of behaviour to punishments (Blair et al., 2006; Lykken, 1957; Patrick, 2005)

• **Anticipatory skin conductance response to punishment attenuated in AB/CU+**

• **Reduced startle response to aversive loud noises in adult psychopaths**
Veerkracht – Functioneren van autonome zenuwstelsel bij 15 jaar beschermt tegen ontwikkelen van criminele carriere op 29 jarige leeftijd

Raine et al., 1995

![Heart Rate Diagram](image)

![Skin Conductance Level Diagram](image)
Components of empathy

- Facial mimicry
- Eye contact
- Understanding and recognition
- Experiencing

- Motor
- Cognitive
- Emotional
Methods

- EMG of facial muscles
- Motor

- Cognitive
  - Emotion recognition
  - Theory of Mind

- Emotional
  - Heart rate, skin conductance
  - Self-report
  - Neurocognition
Physiology

Testosterone, cortisol and oxytocine levels

Emotion Recognition

EMG facial muscles

Heart rate

Skin conductance

Emotion

Eye tracking
## Hypotheses

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<th>Empathy</th>
<th>ASS</th>
<th>CD/ODD</th>
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<td>Motor</td>
<td>Facial mimicry</td>
<td>Vertraagd/</td>
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<td>Emotional</td>
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<td>Cognitive</td>
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<td>Emotion recognition</td>
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Neural basis of CU/psychopathy ?
Relevant brain structures

PFC
ACG
OFC
NAcc
HIP
VP
Amyg
Amygdala dysfunction?
Amygdala

• Amygdala as a stimulus-reinforcement associator

• Mediates conditioned emotional responses

• Important for perception of emotional expressions, particularly negative emotional expressions

• Patients with amygdala damage have poor conditioned emotional response and poor recognition of fear
Lower amygdala reactivity to fearful emotional faces in adolescents with CU traits

FIGURE 1. Results of a Group-by-Emotional Expression Analysis of Variance of Amygdala Activity in Response to Fearful and Neutral Expressions.

The image on the left shows the region of the right amygdala in which an interaction effect was observed. The graph on the right summarizes amygdala activation in each group.
Orbitofrontal cortex dysfunction?
Orbito-frontal cortex

- Patients with orbitofrontal damage:
  - Lack of emotion in decision making (lack of risk aversion)
  - Poor social judgment (antisocial behavior)
  - Poor emotional control (anger)

- Adult Psychopaths:
  - Smaller prefrontal cortex (e.g. Raine et al.)
  - Differential activation of OFC during Go/NoGo task
  - OFC dysfunction related to the antisocial/impulsive aspect of psychopathy?
Biological trajectories

Genetic and environmental

Perinatal factors

Genetic factors

Trauma, violence and neglect

Neural

Decreased amygdala responsiveness

Decreased striatal and vmPFC responsiveness

Increased amygdala responsiveness

Cognitive

Reduced emotional empathy

Impaired decision making

Increased threat sensitivity

Behavioural

Callous-unemotional traits

Antisocial behaviour and instrumental aggression

Frustration-based reactive aggression

Under-regulated responses to social provocation

Threat-based reactive aggression

Anxiety

Conduct disorder

Blair 2013

Nature Reviews | Neuroscience

Donders Institute for Brain, Cognition and Behaviour

Radboud University Nijmegen
Mean effect sizes for 5 regions of interest across 12 structural and 31 functional imaging studies

Mean effect sizes for 5 regions of interest across 43 structural and functional imaging studies

Genetic basis of CD/CU?
Probing the aetiology: Classical twin design

Identical twins  
(monozygotic, MZ)

Fraternal twins  
(dizygotic, DZ)
Genetic studies of antisocial behaviour

- Antisocial behavior (AB/CD)
  - Moderate heritability
  - Some shared environmental influence
  - Moderate non-shared environmental influence
  - Estimates vary as a function of developmental stage

Rhee & Waldman, 2002
Genetic Studies: CU traits

- Genetic and nonshared environmental influences in almost equal measure in adolescents and adults

- **Thus: stronger heritability for CU traits than for AB/CD in general**

  Blonigen et al., 2003: N=353  
  Blonigen et al., 2005: N=626  
  Larsson et al., 2006: N=1090  
  Taylor et al., 2003: N=212 + 180
Developmental Model of Aggression

**GENES**
- Temperament, IQ,
  - Pro-social skills
  - Arousal mechanisms

**Environmental RISKS**
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**Adulthood**