PSYC3016: Developmental Psychology
Abnormal Development: Behavioural Disorder

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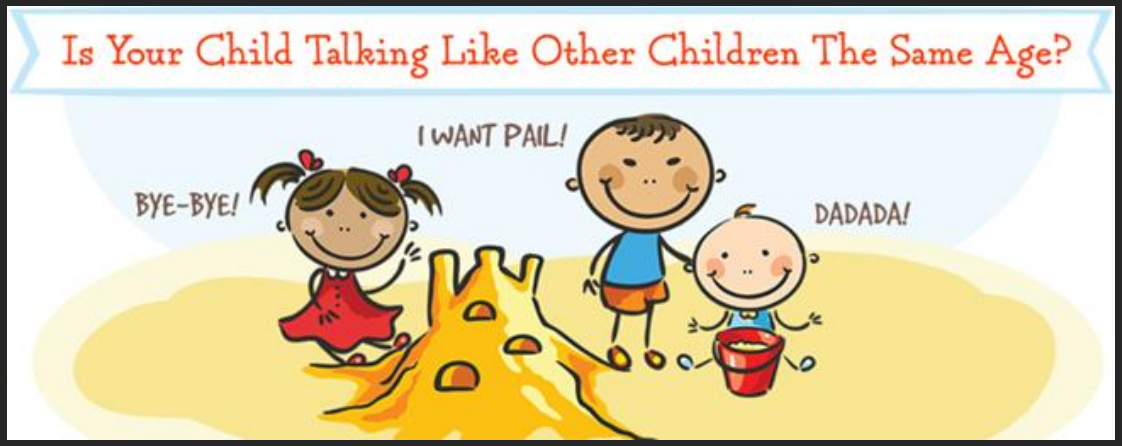
Abnormal Development: why is it important?

- Understanding abnormal behaviour helps our understanding of normal behaviour
  - And vice versa
- Example:
  - Language delay
  - We can recognise when a child has a delay in language acquisition (abnormal)



Abnormal Development: why is it important?

- Early identification – abnormal development in childhood puts the child at risk for difficulties in adulthood

- Intervening early in the developmental course has been associated with…

  - Better treatment outcomes
  - Lessened impact on child
  - Lessened impact on others
  - Better value for money!

Learning outcomes

- LO1 – understand the historical and current theoretical explanations for callous-unemotional traits in children
- LO1 – consider how studying callous-unemotional traits can inform our understanding of social cognition and moral development
- LO4 – understand how research in callous-unemotional traits can have implications for broader social issues such as parenting and clinical treatment.

Abnormal Development: Behavioural Disorder

- What can we learn from studying antisocial behaviour problems in children?
  - How best to help them
  - The developmental trajectory of antisocial behaviour (remember the tutorial?)
  - Where, what and on whom to spend government funding?

  - Social cognition
  - Moral development
  - Family dynamics
  - Impulse control
  - Reward and punishment systems
  - Associative learning systems
  - Attention systems
  - Biology of aggression
  - Genetic risk factors
  - Environmental risk factors

Abnormal Development: Behavioural Disorder

- Antisocial behaviour in more detail – remember the tutorial

Children with antisocial behaviour disorders are a heterogeneous group

Emotionally volatile
Reactive aggression
May have anxiety
Typical for ODD
Low genetic risk
High environmental risk

Unemotional
Reactive and proactive aggression
Typically low anxiety
About 1/3 of children with ODD and CD
High genetic risk
Biological correlates

Callous-unemotional traits

Reduced empathy
Low levels of guilt and shame
Limited prosocial emotions
Reduced affect

Childhood analogue of psychopathic personality traits: defined by personality traits, described by behaviours

Focus of this lecture

What does antisocial behaviour characterised by high levels of CU traits look like?

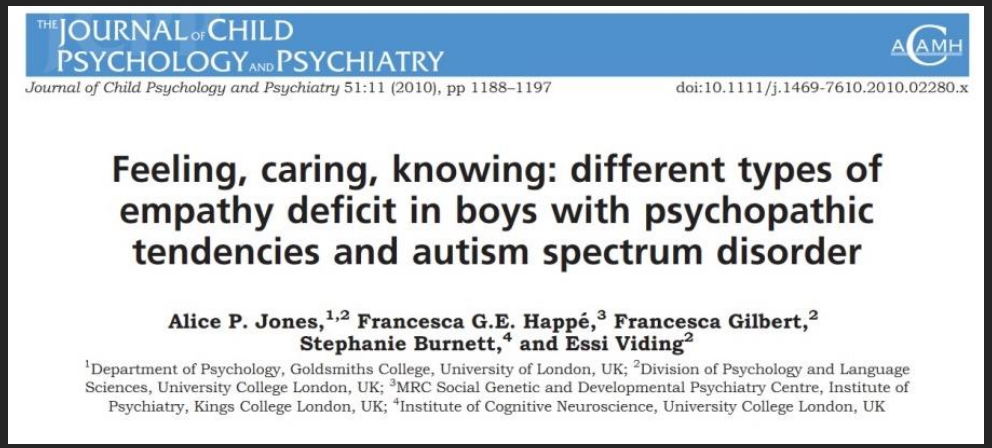
Callous-unemotional traits: theories

- LACK OF EMPATHY

- "I know what the effect of my actions are but I don't care"
- Observational evidence they might lack empathy…
  - proactive aggression, bullying, reduced shame, reduced guilt
- Empirical evidence: deficits in experimental tests of empathy (Do you feel like the person in the story would feel?), emotion recognition deficits



Callous-unemotional traits: theories



THE JOURNAL OF CHILD PSYCHOLOGY AND PSYCHIATRY
Journal of Child Psychology and Psychiatry 51:11 (2010), pp 1188–1197 doi:10.1111/j.1469-7610.2010.02280.x

Feeling, caring, knowing: different types of empathy deficit in boys with psychopathic tendencies and autism spectrum disorder

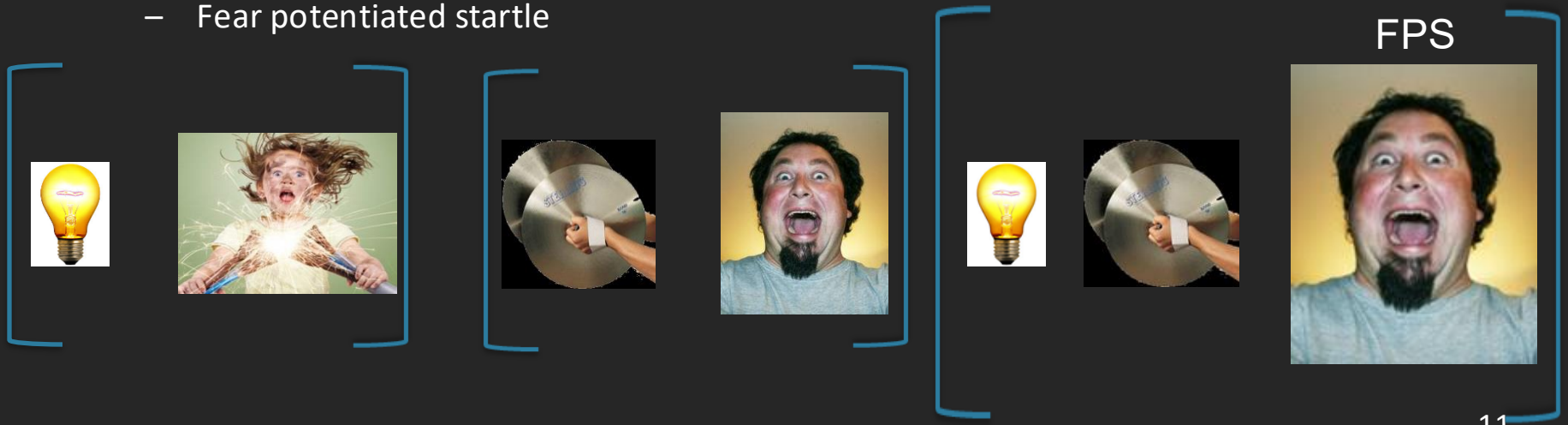
Alice P. Jones,[1,2] Francesca G.E. Happé,[3] Francesca Gilbert,[2] Stephanie Burnett,[4] and Essi Viding[2]

[1]Department of Psychology, Goldsmiths College, University of London, UK; [2]Division of Psychology and Language Sciences, University College London, UK; [3]MRC Social Genetic and Developmental Psychiatry Centre, Institute of Psychiatry, Kings College London, UK; [4]Institute of Cognitive Neuroscience, University College London, UK

- CU – affective empathy impairment
- ASD – cognitive empathy impairment
- Remember the discussion of the development of theory of mind in ASD?
  - In HFASD, explicit ToM is intact
  - In HFASD, implicit ToM is impaired
- High CU seem to be associated with an implicit deficit in empathy
  - What could cause this…?

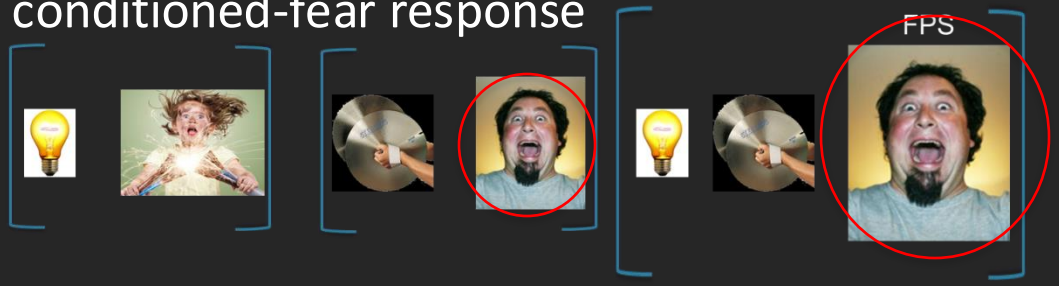
Callous-unemotional traits: theories

- LOW-FEAR HYPOTHESIS – (LYKKEN, 1957)
- A reduced ability to feel fear and thus a reduced influence on behaviour
- “I know what the effect of my actions are but I don’t care”
- Observational evidence they might have low levels of fear…
  - Cleckley’s original description, insensitive to punishment, risky “impulsive” behaviour, failure to recognise fear in others
- Empirical evidence: reduced conditioned-fear response
  - Fear potentiated startle



Callous-unemotional traits: theories

- Yes, people with high levels of psychopathic personality traits have reduced conditioned-fear response



- BUT – normal **unconditioned** fear response
  - What does this mean about the fear system?
- They also report the same levels of subjective fear and discomfort as non-psychopaths
  - What does a **physiological response** mean anyway?
- Low-fear hypothesis? Nope!

Callous-unemotional traits: theories

- PUNISHMENT INSENSITIVITY HYPOTHESIS
- Observational evidence: respond poorly to punishment aspects of parenting interventions – don't change behaviour, treatment failure in adult populations
- Empirical evidence: poor passive avoidance learning, poor response reversal
- So, suggests a serious learning problem as demonstrated in the following video…

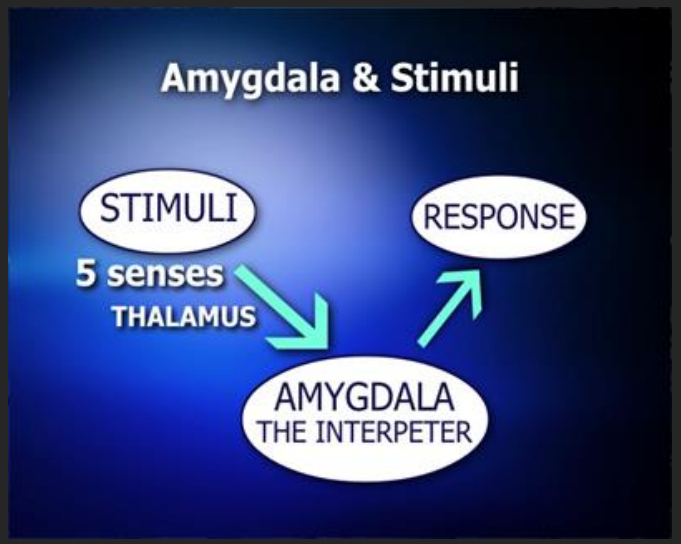
Callous-unemotional traits: theories

- But neither children with high levels of CU traits nor adults with psychopathic personality traits are characterised by learning difficulties
- Also, acquisition is intact – they learn to form association as well as normal
- Also, only punishment insensitive in the presence of rewards – evidence from response-reversal paradigms (we will get to these later)
- So perhaps punishment insensitivity is a partial explanation but it doesn't explain other deficits such as poor emotion recognition

Callous-unemotional traits: theories

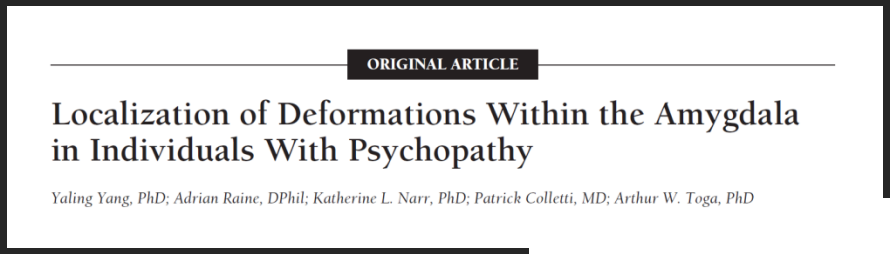
- AMYGDALA DYSFUNCTION

- Broadly: the amygdala is involved in…
  - Emotion recognition and processing
  - Associative learning
  - Fear response
  - Fear conditioning
  - “Emotion centre”
  - Autonomic and affective responses



Callous-unemotional traits: theories

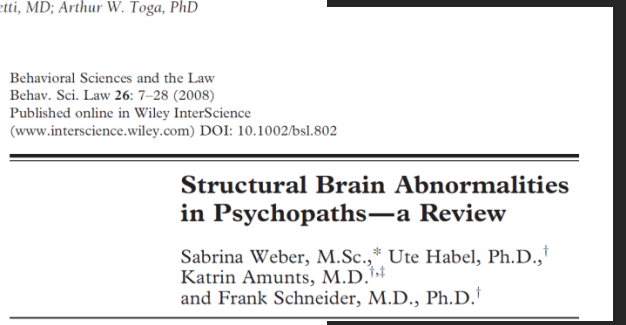
- Empirical evidence…
- The amygdala is abnormally structured
- The amygdala is smaller
- The amygdala is overactive
- The amygdala is underactive
- ?!!!



ORIGINAL ARTICLE

Localization of Deformations Within the Amygdala in Individuals With Psychopathy

Yaling Yang, PhD; Adrian Raine, DPhil; Katherine L. Narr, PhD; Patrick Colletti, MD; Arthur W. Toga, PhD



Behavioral Sciences and the Law
Behav. Sci. Law **26**: 7–28 (2008)
Published online in Wiley InterScience
(www.interscience.wiley.com) DOI: 10.1002/bsl.802

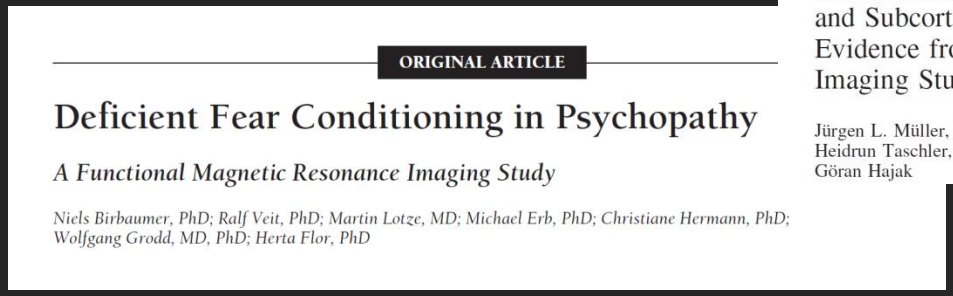
Structural Brain Abnormalities in Psychopaths—a Review

Sabrina Weber, M.Sc.,* Ute Habel, Ph.D.,† Katrin Amunts, M.D.†,‡ and Frank Schneider, M.D., Ph.D.†

Functional Imaging of Conditioned Aversive Emotional Responses in Antisocial Personality Disorder

Frank Schneider[a] Ute Habel[a] Christoph Kessler[a] Stefan Posse[b] Wolfgang Grodd[c] Hans-Wilhelm Müller-Gärtner[d]

[a]Department of Psychiatry, University of Düsseldorf, [b]Institute of Medicine, Research Center Jülich, [c]Department of Neuroradiology, University of Tübingen, and [d]Department of Nuclear Medicine, University of Düsseldorf, Germany

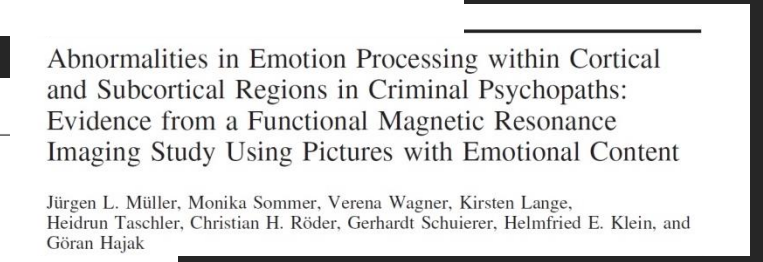


ORIGINAL ARTICLE

Deficient Fear Conditioning in Psychopathy

A Functional Magnetic Resonance Imaging Study

Niels Birbaumer, PhD; Ralf Veit, PhD; Martin Lotze, MD; Michael Erb, PhD; Christiane Hermann, PhD; Wolfgang Grodd, MD, PhD; Herta Flor, PhD



Abnormalities in Emotion Processing within Cortical and Subcortical Regions in Criminal Psychopaths: Evidence from a Functional Magnetic Resonance Imaging Study Using Pictures with Emotional Content

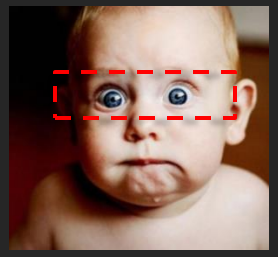
Jürgen L. Müller, Monika Sommer, Verena Wagner, Kirsten Lange, Heidrun Taschler, Christian H. Röder, Gerhardt Schuierer, Helmfried E. Klein, and Göran Hajak

Callous-unemotional traits: theories

- Some great theories – some big problems

- No full explanation
  - Only affective empathy
  - Only conditioned-fear response
  - Only punishment-insensitive in certain conditions
  - Role of the amygdala is unclear
- Psychopathy and CU traits are subtle – the behaviours associated with them are not
- So, what if we take a developmental approach?
- What if we think about the effect of minor deficits over time?

Callous-unemotional traits: three main replicated findings



- FEAR-RECOGNITION DEFICITS
- Reliable finding – adults and children, with or without antisocial behaviour
- Two extra important bits of data…
- 1. Dadds et al., 2006 “Attention to the eyes and fear recognition deficits in child psychopathy”
- 2. Fear recognition and the brain
  - Subcortical visual pathway (terminates in activation of the basolateral amygdala) directs gaze towards salient social stimuli (**implicit** fear recognition)
  - Shift in gaze to attend to the eye-region of a fear face
  - Activation of the central amygdala and **explicit** fear recognition
- What would be the result of this snowball?

Callous-unemotional traits: three main replicated findings

- POOR RESPONSE-REVERSAL LEARNING (passive avoidance)
- Intact acquisition but reduced ability to modify response in light of changing outcomes

What could be the result of this snowball?

- Punishment insensitive? Reward dominant?
- Does reward/punishment actually matter?
  - Just less behavioural flexibility?

Callous-unemotional traits: three main replicated findings

- REDUCED CONDITIONED FEAR RESPONSE

Attention moderates the fearlessness of psychopathic offenders

Joseph P. Newman, **John J. Curtin**, **Jeremy D. Bertsch**, and **Arielle R. Baskin-Sommers**
Department of Psychology, University of Wisconsin, Madison, WI 53706, USA

Abstract

Background—Psychopathic behavior is generally attributed to a fundamental, amygdala-mediated deficit in fearlessness that undermines social conformity. An alternative view is that psychopathy involves an attention-related deficit that undermines the processing of peripheral information including fear stimuli.

Methods—We evaluated these alternative hypotheses by measuring fear-potentiated startle (FPS) in a group of 125 prisoners under experimental conditions that (a) focused attention directly on fear-relevant information or (b) established an alternative attentional focus. Psychopathy was assessed using Hare's (1) Psychopathy Checklist-Revised (PCL-R).

Results—Psychopathic individuals displayed normal FPS under threat-focused conditions but manifested a significant deficit in FPS under alternative-focus conditions. Moreover, these findings were essentially unchanged when analyses employed the interpersonal-affective factor of the PCL-R instead of PCL-R total scores.

Conclusions—The results provide unprecedented evidence that higher-order cognitive processes moderate the fear deficits of psychopathic individuals. These findings suggest that psychopaths' diminished reactivity to fear stimuli, and emotion-related cues more generally, reflect idiosyncrasies in attention that limit their processing of peripheral information. Although psychopathic individuals are commonly described as cold-blooded predators who are unmotivated to change, the attentional dysfunction identified in this study supports an alternative interpretation of their chronic disinhibition and insensitive interpersonal style.

Just to make it even stranger…

← Read me

Callous-unemotional traits: why a developmental approach fits

- Psychopathy and CU traits are SUBTLE
- TIME is the crucial variable
- Sometimes you NEED to take a developmental approach in order to see the whole picture

Callous-unemotional traits: a possible explanation

Psychological Review

0033-295X/12/$12.00 DOI: 10.1037/a0029342

A Model of Differential Amygdala Activation in Psychopathy

Caroline Moul, Simon Killcross, and Mark R. Dadds
University of New South Wales

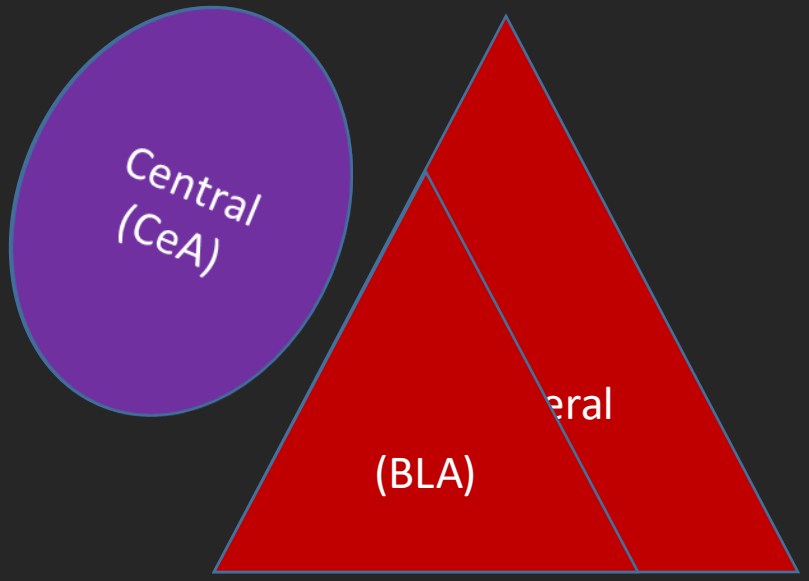
This article introduces a novel hypothesis regarding amygdala function in psychopathy. The first part of this article introduces the concept of psychopathy and describes the main cognitive and affective impairments demonstrated by this population; that is, a deficit in fear-recognition, lower conditioned fear responses and poor performance in passive avoidance, and response-reversal learning tasks. Evidence for amygdala dysfunction in psychopathy is considered with regard to these deficits; however, the idea of unified amygdala function is untenable. A model of differential amygdala activation in which the basolateral amygdala (BLA) is underactive while the activity of the central amygdala (CeA) is of average to above average levels is proposed to provide a more accurate and up-to-date account for the specific cognitive and emotional deficits found in psychopathy. In addition, the model provides a mechanism by which attentional-based models and emotion-based models of psychopathy can coexist. Data to support the differential amygdala activation model are provided from studies from both human and animal research. Supporting evidence concerning some of the neurochemicals implicated in psychopathy is then reviewed. Implications of the model and areas of future research are discussed.

Keywords: psychopathy, basolateral amygdala, central amygdala, model

- Note: I am biased!

A differential amygdala activation model of psychopathy

- Theory: The amygdala is differentially activated in people with high levels of psychopathic personality traits
- Specifically: The basolateral amygdala is under-activated and the central amygdala functioning at normal, or above, levels



A differential amygdala activation model of psychopathy

- What does this theory predict?

- The basolateral amygdala is involved with the **automatic** allocation of attention
- The central amygdala is involved with explicit emotion recognition and the physiological fear response

- The basolateral amygdala encodes the specific features of stimuli (e.g. $1 versus $5, chicken or a dog)
- The central amygdala encodes the general valence of a stimulus (good versus bad, I want versus I don't want)
- The learning parameters are different

- PTC: Imagine your amygdalae function like this from birth…

Is a psychopath born or made?

- Silly question
- But…

- Evidence shows that CU are highly heritable ~ 80%

- Recent research has identified two types of psychopathy
  - Primary psychopathy
  - Secondary psychopathy

Primary versus secondary psychopathy

- Both characterised by
  - High levels of CU traits
  - High levels of antisocial behaviour
- Differ in
  - Anxiety (high in secondary, low in primary)
  - Sex ratio (more even sex ratio in secondary)
  - Aetiology (child maltreatment associated with secondary but not primary)
- Current thinking
  - Primary psychopathy has a (mainly) biological, genetically-based aetiology
    - Serves both as a risk factor for antisocial behaviour and as a protective factor against environmental risk (differential susceptibility)
  - Secondary psychopathy arises as a response to abuse/maltreatment
    - Biological component still relevant but possibly different pathways involved

Primary versus secondary psychopathy

- Secondary psychopathy
  - Reactive attachment disorder

Primary versus secondary psychopathy

Primary

Psychopathic traits

Secondary

Three take home messages:

- The development of psychopathy provides a good example of the importance of psychological research
  - The same treatment does not work for all children
  - There are reasons why the same treatment does not work for all children
  - Similar behaviours and personality traits can have very different aetiological pathways
- Psychopathy is a “hot” topic
  - Do not believe anything unless you read it in a scientific journal!
  - And even then be critical
- Who will be an advocate for these children if not you?
  - These children (with high CU traits) are the ones you hear about in the news
  - The odds are stacked against them through biology or environment from the very beginning
  - Everyone knows about the cognitive difficulties associated with ADHD. No-one knows about the cognitive difficulties associated with CU
  - They are just children