

State of the art:

Psychopathy

ONE of the first things to strike you when you begin to work with psychopathic individuals is the clear discordance between the way that they verbalise emotion and the way that they appear to experience it. As Johns and Quay (1962) once put it, psychopathic individuals 'know the words but not the music' (p.217). In this article we argue that although these individuals commit a hugely disproportionate amount of crime, criminality is not the essence of the disorder. The essence lies in their difficulties with emotion.

Diagnosis

So how should we diagnose psychopathy? The American Psychiatric Association (APA) has made several attempts to provide criteria for related disorders. For example DSM-IV provides us with the diagnoses of conduct disorder (CD) for children and antisocial personality disorder (APD) for adults (APA, 1994).

However, these diagnoses tend to encompass large numbers of individuals. For example, estimates for rates of CD in boys range from 6 to 16 per cent (APA, 1994), and between 50 and 80 per cent of adult male inmates reach criteria for APD (Hart & Hare, 1996). Unless we desire to label almost all individuals who engage in antisocial behaviour as presenting with a psychiatric disorder, we must consider these diagnoses to be unsatisfactory.

Professor Robert Hare has developed an alternative, and arguably more successful, method for identifying individuals whose antisocial behaviour may reflect an actual disorder: the revised Psychopathy Checklist (PCL-R) (Hare, 1991). The PCL-R is made up of a total of 20 items covering behavioural, affective and interpersonal characteristics. Items are scored on the basis of an extensive file review and a semi-structured interview. Factor analyses consistently reveal two distinct but correlated factors.

'Factor 1' corresponds to the affective and interpersonal characteristics. Items loading on Factor 1 include 'superficial charm', 'pathological lying',

DEREK MITCHELL and JAMES BLAIR argue that psychopaths lack the 'music of emotion'.

'manipulation', 'lack of empathy' and 'shallow affect'. 'Factor 2' corresponds to the chronic and versatile antisocial lifestyle. Items loading on Factor 2 include 'proneness to boredom', 'parasitic lifestyle', 'impulsivity', 'juvenile delinquency' and 'revocation of conditional release' (Hare, 1991).

Essentially, the psychopathic individual is someone with an emotional disorder who also has a high risk of showing antisocial behaviour.

Advantages of assessment

There are two major advantages of the PCL-R over other measures of assessing antisocial individuals. First, unlike some other measures the PCL-R is very reliable: inter-rater coefficients are never less than 0.83 (Hare, 1991). Second, and more importantly, the PCL-R is very useful in risk assessment.

For example, in an early study the checklist was administered to 231 offenders prior to their release from prison (Hart *et al.*, 1988). Detailed probation and parole reports of behaviour were available for 105 of the offenders. Amazingly, within three years, 80 per cent of the psychopathic offenders, but only 25 per cent of the non-psychopathic offenders had violated the terms of release. In another study 299 offenders were followed; 65 per cent of the psychopathic individuals were convicted of a new offence within three years, compared to only 25 per cent of the non-psychopathic individuals (Serin & Amos, 1995).

In a recent meta-analysis, Hemphill *et al.* (1998) determined that within a year of release, psychopathic offenders were three times more likely to recidivate, and four times more likely to recidivate violently. They also examined the correlations between six other actuarial risk scales (designed specifically to predict

reoffending) and general recidivism. None of these scales predicted general recidivism better than the PCL-R. Furthermore, the PCL-R correlated more strongly with violent recidivism than any of the other actuarial scores.

The role of culture and biology

The PCL-R identifies individuals with emotional difficulties such as lack of guilt and empathy, who also present with extremely antisocial behaviour. The display of the full disorder appears to involve a

complex interaction between social environment and biological predispositions.

In particular, social environment has an influence on the behavioural component (Factor 2) of psychopathy; for example, socio-economic status (SES) is inversely related to these item scores. In contrast, the emotional component (Factor 1) is unrelated to SES or IQ (Hare *et al.*, 1991). We suggest that it is biological make-up that determines whether individuals show emotional difficulties.

However, these emotional difficulties are only risk factors for the development of the disorder. It is the individual's adverse social environment that creates the conditions necessary for the development of psychopathy. What exactly are the features of this adverse social environment?

Social contributions

Like most forms of criminality, psychopathy has been linked to problems within the family. So, for example, parental antisocial attitudes, inconsistent discipline, physical punishment, broken homes, and childhood separations all predict high psychopathy scores in adolescence (Forth, 1995). Ostensibly these social factors either provide the individual with a model for an

antisocial style of conflict resolution (e.g. the child frequently witnesses the use of violence to solve problems) or they provide actual motives for habitual offending (e.g. the individual resorts to crime to compensate for inadequate resources).

The quality of parenting influences the probability of conduct problems in most children (Wootton *et al.*, 1997). So if the parent fosters the child's empathic responding, healthy children are less likely to be antisocial. In contrast, if the parent typically socialises the child by physical punishment, the child is more likely to develop conduct problems.

However, the link between quality of parenting and conduct problems does not hold true for children who display the emotional difficulties typically associated with psychopathy (lack of guilt, flat affect, lack of empathy and remorse). Surprisingly, for these children the socialisation practice that the parent employs has no effect on the probability that a child will develop these behavioural problems (Wootton *et al.*, 1997).

Clearly though, not all the social contributions to psychopathy occur within the confines of the family. There appear to be cultural effects also. Indeed, Professor

David Cooke and his colleagues at Glasgow Caledonian University have found that there are significant cross-cultural differences in the prevalence of psychopathy (Cooke & Michie, 1999). In essence, there are many more individuals with psychopathy per head of the population in North America than there are in Scotland or in Europe as a whole.

The authors suggest that Scottish prison inmates need to have a higher underlying psychopathic trait strength before many of the characteristics of the disorder (e.g. 'grandiose sense of self-worth' or 'glibness/superficial charm') became apparent. Why is this so? The authors offer several possibilities.

One explanation is that elements of Scottish culture may 'dampen' the expression of some psychopathic traits. For example, the tendency to openly discuss one's strengths and abilities may be discouraged to a greater extent in Scotland than in other cultures. Another is that psychopathic individuals, because of their tendency to seek stimulation, would have been more likely to migrate to areas with higher population densities in the south of England or in the New World. Currently, not enough research is available to determine which of these two possibilities, or of any number of others, is correct.

Emotional difficulties

So far we have stressed the importance of emotional difficulties in psychopathic individuals. However, we have not specified in any detail what these difficulties are. How does emotional processing in psychopathic individuals differ from that shown by those without the disorder? What emotional systems are dysfunctional in psychopathic individuals? Currently, there are two main theories. The first suggestion is that individuals with psychopathy show abnormalities in how they experience fear. The second is that the primary dysfunction is in empathy.

A lack of fear? There have been many suggestions that psychopathy is due to difficulties in processing fearful stimuli (e.g. Lykken, 1957; Patrick, 1994). This position rests on the assumption that socialisation is achieved through fear conditioning.

According to this theory, individuals learn to avoid antisocial behaviour because they are 'frightened' of the consequences. Those with an impairment in fear cannot be socialised in this way. As a result they do not learn to avoid antisocial behaviour.

In line with this position it has been repeatedly demonstrated that individuals with psychopathy show difficulties with fear conditioning.

In a typical experiment conducted in the 1970s psychopathic and non-psychopathic inmates were presented with three different musical tones: one followed by shock, one by a pleasant visual stimulus, and one followed by nothing. Eventually non-psychopathic individuals exhibited a fear response (measured by sweating) simply on hearing the tone that predicted shock. In contrast psychopathic individuals did not develop this fearful response to the tone (Hare, 1991).

More recently the difficulties with processing fearful stimuli have been indexed in individuals with psychopathy through the use of a new paradigm: the potentiated startle reflex technique (Patrick, 1994). Your startle reflex is the slight jump you make when something unexpected occurs such as a loud noise or something rushing suddenly towards you.

This reflex can be potentiated or primed by pre-exposing the individual to threatening images, such as a picture of a pointed gun or a wounded body. Priming the loud noise with this threatening display will make healthy individuals show a much greater startle reflex than with the noise alone. In striking contrast, the startle reflex of individuals with psychopathy is not enhanced by preceding the noise with threatening pictures (Patrick, 1994).

But what do these results mean? What is the significance of the psychopathic individual's difficulties in processing fearful stimuli? The fear position maintains that socialisation is achieved via fear conditioning. However, this proposal has been questioned (Blair, 1995). Much of the socialisation literature does not support punishment as an effective means of socialisation. Instead the literature stresses the importance of empathy induction — focusing the transgressor's attention on the harm caused to the victim.

A lack of empathy? Could the psychopathic individual have difficulties generating empathic responses to others? Possibly. But what is empathy?

One of us has attempted to address this



Individuals with psychopathy show reduced emotional response to the distress of others

question at both the cognitive and anatomical levels (Blair, 1995). The position is rooted in the ethological work of Konrad Lorenz (1981), who noted that most social animals terminate their aggressive attacks when a member of the same species displays a submissive posture or cue. I suggest that sad, and perhaps fearful, expressions may serve a similar purpose in humans. Moreover, because they are emotionally unpleasant stimuli they act as punishments, thereby making actions that caused them in healthy individuals less likely in the future.

The suggestion is that empathy induction is such a successful method for socialisation because it effectively focuses the child's attention on their natural punishment. I argue that psychopathic individuals are less sensitive to the sadness and fear of others and so are far more difficult to socialise.

There certainly is evidence that individuals with psychopathy show reduced sensitivity to the distress of others. If you show healthy individuals a picture of a crying human face they will show an emotional response to this image (e.g. as measured by sweating). Individuals with psychopathy, however, show reduced emotional responses to these representations.

Interestingly, this is not a generalised problem. Individuals with psychopathy and comparison individuals from the same prisons showed equivalent emotional sweat responses to the sight of an angry face (Blair *et al.*, 1997). The difficulty that confronts individuals with psychopathy appears to be confined to the processing of sad, and perhaps fearful, expressions.

Another way in which we can index the striking indifference of individuals with psychopathy to the welfare of others is by examining the moral/conventional distinction. The moral/conventional distinction is the distinction that children from the age of three and a half years make between moral (victim-based — one person hitting another) and conventional (social disorder based — talking in class) transgressions (Smetana, 1993).

Consider for yourself. Two children are talking in class during the lesson. Is this OK? You probably think that it is not. But what if the teacher says: 'In this school any child can talk whenever they want to.' Is it OK for the two children to talk? Now you probably think so. You allowed the conventional, social transgression of talking in class when there was no rule prohibiting the action.

However, suppose one of the children has just hit another. Is this OK? Almost certainly, you think not. But what if the teacher now says: 'In this school any child can hit any other child whenever they want to.' Is it OK now? You probably still think not.

From the age of three and a half, most

WEBLINKS

The Hare Lab: www.hare.org

Article by Patrick on psychopathy and emotion: www.sscp.psych.ndsu.nodak.edu/patrick.htm

healthy individuals will not allow moral transgressions whatever the rule conditions. But individuals with psychopathy are strikingly different in this respect. Unlike comparison individuals from the same forensic institutions they do not differentiate between the types of transgressions. It is not that they do not know that the transgressions are prohibited; to paraphrase Johns and Quay (1962): they know the words of the rule but they do not know the music; they do not feel the same aversion that healthy individuals do at the thought of the pain of others.

Biological contributions

Both the fear and empathy positions on psychopathy have generated a considerable number of experiments. However, there is a serious problem. The fear position makes testable predictions but has difficulty accounting for the empathy results; and the empathy position makes testable predictions but has difficulty accounting for the fear results.

For example, how can the psychopathic individual's reduced emotional responses to sad, but not angry, faces be interpreted as a problem in fear processing? Alternatively,

how can the psychopathic individual's difficulties with aversive conditioning be interpreted as a problem in empathy?

Is there any way in which the fear and empathy positions can be integrated? We suggest that there is if we consider the potential biological bases to psychopathy. Perhaps damage to one brain structure might allow for an account of the entire disorder. Currently there are two candidate structures which have been implicated in the development of psychopathy: the orbitofrontal cortex (e.g. Damasio, 1994) and the amygdala (e.g. Blair *et al.*, 1999; Patrick, 1994).

An orbitofrontal cortex problem?

The orbitofrontal cortex is a small region of the frontal lobes located roughly behind and a little below the centre of your forehead. Damasio and others have suggested that difficulties in the orbitofrontal cortex may give rise to developmental psychopathy primarily because those who have suffered damage to this region of the brain show severe social behavioural problems (e.g. Damasio, 1994; Lapierre *et al.*, 1995). In particular they often have rage attacks and may be aggressive.

For example, one of us once worked with a man who would frequently lose his temper and even strike out at nurses if his food was not delivered on time. Damasio (1994) termed those who have behavioural difficulties following lesions to the orbitofrontal cortex 'acquired sociopaths'.

However there are clear behavioural differences between people who have suffered damage to the orbitofrontal cortex and individuals with psychopathy. The first of these concerns the form of the antisocial behaviour. Those with damage to the orbitofrontal cortex show reactive aggression: they react angrily to things that provoke or frustrate them. Individuals with psychopathy tend to exhibit instrumental aggression: they show aggression for material reasons or to establish respect if someone has slighted them (Cornell *et al.*, 1996).

A second difference is in their emotional responding. According to Damasio, damage to the orbitofrontal cortex leads to reduced autonomic activity in response to a variety of social signals (Damasio, 1994). In contrast the emotional difficulties of individuals with psychopathy are far more selective: they show reduced autonomic activity only in response to sad

or fearful expressions or during fear conditioning.

For these reasons we must question the role of orbitofrontal cortex problems in the development of the disorder of psychopathy.

An amygdala problem? The amygdala is an almond-shaped structure located bilaterally in the forebrain. It is one of the most crucial regions in the neural circuitry that processes emotion, and is at the centre of what Joe LeDoux (1998) termed 'the emotional brain'. We believe that it is this region that is functioning atypically from an early age in people with psychopathy. Moreover, we believe that it is this problem in amygdala functioning that leads to the psychopathic individual's emotional disorder.

It has long been known that the amygdala is a crucial component in the brain systems mediating fear. So for example, just like individuals with psychopathy, a human or an animal that suffers damage to the amygdala does not show normal fear conditioning or startle reflex potentiation (LeDoux, 1998).

More recently it has become clear that the amygdala is involved in the human emotional response to sad facial expressions (Blair *et al.*, 1999). In one experiment, we used the positron emission tomography (PET) functional imaging technique to determine which regions of the brain respond to sad faces (Blair *et al.*, 1999). It was observed that if you increase the degree of sadness of a sad face, the amygdala and connected brain regions become increasingly active.

This provides evidence of a link between empathy and amygdala functioning. Thus, processes that are impaired in individuals with psychopathy are those which rely on amygdala functioning. We therefore believe that amygdala dysfunction may very well be the biological risk factor for the development of this serious disorder.

Conclusion

Psychopathy is a disorder that results from a complex interaction between social and biological factors. Social forces such as a disadvantaged environment are thought to be associated with the antisocial behaviour typical of the disorder. Attempts to characterise the emotional component of psychopathy have varied in their approach. Researchers have emphasised the fear and empathy explanations to varying degrees, but neither account on its own explains all of the features of the disorder.

Similarities between patients with orbitofrontal cortex lesions and individuals with psychopathy have prompted some researchers to ascribe the locus of dysfunction in that structure. However, we have pointed out clinical and experimental observations that suggest why this explanation is problematic.

Finally, we have identified one structure, the amygdala, that may be crucial for the healthy development of both fearful and empathic responding. As a consequence we suggest that the emotional features of psychopathy are best explained by a deficit in the functioning of the amygdala.

Recent advances in research into the disorder of psychopathy show great promise in helping to shed light on the aetiology of what has been a mystifying disorder. Ultimately, the success of the positions described above will be judged by their ability to provide information that is relevant for treatment and patient management.

At this time the prognosis for individuals with psychopathy is not encouraging. The general consensus is that treatment options currently available are ineffective (e.g. Hare, 1996). In fact there is some research that suggests that some therapeutic methods may actually make behavioural problems worse (Rice *et al.*, 1992).

Nevertheless disorders such as schizophrenia were once thought to be untreatable; now a variety of psychological and pharmacological interventions are available. We firmly believe that research in the near future may allow us techniques to ameliorate this disorder also.

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