The etiology of psychopathy: A neuropsychological perspective

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Abstract

While there is no universally accepted cause of psychopathy, there are basic biological patterns in brain dys-function observed in individuals who display psychopathic tendencies. These individuals show significant impairment in specific regions of the brain, particularly the orbital frontal cortex (OFC). Such abnormalities exist in brain areas most involved in impulse control and behavior inhibition. There are also significant environmental factors that the majority of these individuals have in common. For example, a strong correlation exists between attachment disorder and anti-social personality disorder (ASPD). Finally, the differences between ASPD, psychopathy, and sociopathy are considered. While these terms are often used interchangeably, there are clear differences between these psychopathologies.

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1. Introduction

Psychopathy has been defined as a personality disorder in which the individual displays overt antisocial behavior as well as a host of deviant personality traits, including a lack of empathy, lack of remorse, callowness, shallow affect, low tolerance for frustration or aggression, and manipulation of others (Viding, 2004). While there is a difference between a psychopath and a sociopath, the terms psychopathy and sociopathy have often been used interchangeably over the years. Currently, they are categorized by the American Psychological Association (APA) in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR, 2000) as simply Antisocial Personality Disorder, Category 301.7. According to the DSM-IV, Antisocial Personality Disorder (ASPD) is “a pervasive pattern of disregard for, and violation of, the rights of others that begins in childhood or early adolescence and continues into adulthood. [It is a] pattern... also referred to as psychopathy, sociopathy, or dyssocial personality disorder” (p. 645). The DSM-IV further states the following:

Deceit and manipulation are central features of ASPD. Individuals with ASPD fail to conform to social norms with respect to lawful behavior... such as destroying property, harassing others, stealing... disregard[ing] the wishes, rights, or feelings of others...in order to gain personal profit or pleasure. (American Psychiatric Association, 2000, p. 645)

Pinel (1745–1826) was one of the first to describe the psychopathic individual almost 200 years ago when he wrote about patients who were “insane” but “without delirium.” He described these patients as having a characteristic lack of restraint, and as those whose behavior was marked by complete remorselessness for their actions (Hare, 1993). In 1941, Checkley wrote the definitive work on psychopathy for the modern day psychiatric community in The Mask of Sanity. In 1985, Hare further operationalized the concept of psychopathy when
he published his revised form of the psychopathy checklist (PCL-R; Hare, 1991). Hare's diagnostic instrument indexed more than just the "extremely antisocial" behavior seen in psychopaths, but also the personality markers that lie at the core of the disorder.

Because the terms psychopath and sociopath have been interchangeably, there continues to be confusion between these terms. While these individuals share many of the same traits listed of Hare's Psychopathy Checklist (the PCL-R), there are some notable differences. According to Ramsland (2007), while the psychopath does not experience feelings of remorse for his or her deeds, no matter how cold and heinous, the sociopath may be capable of feeling guilt and regret for his or her deeds, at least in the context of group (such as in gang affiliation) or familial relationships. The sociopath, however, cares nothing for social norms, and will violate them without hesitation if doing so satisfies his or her own desires or purposes. According to O'Connor (2006), common sociopathic traits include conscience defect, egocentricity, callousness, impulsivity, excessive boasting, risk-taking, antagonism and aggressive acting out, inability to resist temptation, and deprecating attitude toward the opposite sex. Not surprisingly, also listed was a lack of interest in enduring, long-lasting relationships or bonding with a mate.

Lykken (1995) differentiates between the "common" sociopath and the psychopath by pointing out that sociopathy is often a result of environmental factors, such as parenting, fatherlessness, and lack of socialization, while psychopathy can be traced to biologically inherent factors, such as temperament. Sociopathy, says Lykken, is a problem of "unsocialization." Further, he says, sociopaths tend to reproduce themselves, feeding the streets with fatherless offspring to the gangs.

The psychopath, on the other hand, is one who has all these characteristics and more. Lykken's (1995) list of key characteristics includes a strong need for stimulation, a complete lack of remorse or guilt, conning and manipulativeness, and a parasitic lifestyle. The psychopath is a predator who needs to hunt and stalk prey. Hare (1996) called these individuals "intraspecies predators" who will use whatever means necessary, including violence, to control others and satisfy their wants and needs. Psychopaths display an abnormal lack of conscience and compassion, and says Hare (1996), "cold-bloodedly take what they want and do as they please, violating social norms and expectations without the slightest sense of guilt or regret" (p. 25).

According to Miller (1987), the psychopath is impulsive, self-centered, aggressive, and opportunistic. These individuals tend to become easily bored, demand instant gratification, and are easily frustrated. Tedium and routine are unendurable for them, as evidenced by their continual risk-taking behaviors. They tend to find gratification in rushing from one audacious venture to the next, regardless of the danger or consequences to themselves or others, finding pleasure in the thrill it brings them.

Psychopaths not only show little regard for the pain brought upon others by their deeds, but a blatant lack of concern for the consequences of their actions, regardless of who they affect, themselves included (Blair et al., 2006), and are known for the callous disregard they demonstrate toward their victims. Researchers understand only a little about the actual causative mechanisms behind psychopathy. There is widespread agreement, however, "that social factors, particularly early adverse events, such as abuse, play a role in the later development of personality disorders" (Farrington, 1993, as cited in Vollm et al., 2004, p. 40).

2. Attachment disorder and adolescent antisocial disorder

As the attachment literature has shown over recent years, the affective bonds formed in early childhood with primary caregivers are foundational in personality development. From what is known about the family histories of many violent offenders, the majority of those who have grown to commit violent crimes have had histories of early childhood abuse and/or neglect, or have at the very least been raised in environments where violence was the norm (Lang, Kliteberg, & Alm, 2002). Richard Kuklinski grew up in an extremely violent home and was already violent at an early age; Henry Lee Lucas reported growing up with a mother who was herself extremely disturbed. Ed Gein's home was not much better, nor was Charles Manson's. The list goes on.

Arrigo and Griffin's (2004) research on attachment theory, psychopathy, and predatory aggression demonstrates how early childhood experiences, violence, and crime in adulthood are linked. They remind us that, according to Bowlby's (1969) theory, there is a strong environmental component to psychopathy, as well as a biological one, that cannot be overlooked (Arrigo & Griffin, 2004). Correctional facilities are full of men and women who, as children, already had the attention of their caretakers and schoolteachers, and in many cases, the local legal authorities, long before the world knew them as they do now. Lynam (1996) referred to such individuals as "fledgling psychopaths" (as cited in Roussy & Toupin, 2000).

According to Roussy and Toupin (2000), numerous studies have shown the correlation between frontal lobe function and impairment in executive and behavioral inhibition discrimination tasks in delinquents. An important early symptom of psychopathy is “persistent, frequent, and varied associa and antisocial behavior starting at an early age” (p. 414). The authors further remind us of the personality traits of these “budding” sociopaths, including gibleness, egocentricity, superficial charm, manipulativeness, and the characteristic lack of remorse and guilt that appears to be at the core of psychopathy, and that will more often than not follow them throughout life.

The correlation between violent crime and psychopathy is a strong one. Despite the correlation, however, little is known as to why some individuals become serial killers with clear predilections toward psychopathy and others do not (Fonagy et al., 1997), who have done extensive research on the case of Aileen Wuornos and other predatory serial killers, argue that violence and crime are actually disorders of the attachment system itself. It is through meaningful attachment relationships that humans develop the necessary mental capacities to reflect on their own internal states as well as that of others. Without this ability, these researchers argue, violence and criminal acts against others as a way of coping becomes an easier option due to the lack of mental representation of other by such offenders (Arrigo & Griffin, 2004).

The research points out another important issue: psychopaths are not only antisocial, but have clear neurocognitive markers that are indicative of the problems these individuals have processing distress signals in others. The interpersonal or affective dimension of psychopathy, even in children with psychopathic/antisocial tendencies, includes shallow affect, cunning, and lack of guilt and empathy (Viding, 2004). Behaviorally, these individuals are often extremely impulsive and display poor emotional control from an early age. Biologically, while there is no universally accepted "cause" of psychopathy, there are basic patterns of brain dysfunction seen in individuals who display psychopathic tendencies.

3. Frontal lobe dysfunction and the neuropsychology of aggression in psychopathy

Frontal lobe dysfunction, along with the executive dysfunction that results, has long been linked to psychopathy (Blair et al., 2006). According to the research in this area, specific regions of the frontal cortex, rather than the whole cortex itself, may be implicated in psychopathy. Individuals who are psychopaths show significant impairment on the orbital frontal cortex (OFC) function measure compared to controls. While brain imaging studies support this hypothesis to a degree, and there is evidence that those individuals who present with antisocial behavior are impaired in areas of executive functioning, Blair et al. state that there currently is "no clear-cut way of distinguishing between different forms of executive dysfunction or the different regions" of the prefrontal cortex (p. 153).
Compromised functioning of the orbital prefrontal cortex and its associated neural circuitry and what does and does not affect function (that is, cause and effect) is an extremely complex process. Fallon (2006) viewed psychopathy from a neuroanatomical perspective, and the multiple levels of this issue, including genetic, neurophysiological, neuronal, and related brain circuitry, were considered. These levels were then viewed in light of prenatal, perinatal, and postnatal development in the psychopathic individual, as well as the relative contributions of nature (genes) and nurture (environment). The author concluded that, clearly, there are no easy or clear cut answers to the question of what causes such a condition. The etiology of psychopathy, agrees Salekin (2002), is still not well understood.

The OFC is located just behind the orbits of the eyes in humans. This part of the brain is involved in cognitive processes, including the all important decision-making process. It has been proposed that the OFC could be involved in planning behavior associated with reward and punishment, emotions, social behavior, and rule learning (Zald & Kim, 1996). Fallon (2006) concludes that violent psychopathy in youth could be associated with OFC structural and functional damage, which could affect the related circuitry (amygdala, associated basal ganglia, and cortico-subcortical loop circuits).

According to Roussy and Toupin (2000), “Lapierre et al. (1995) present a more neurophysiologically specific hypothesis of orbitofrontal deficits in psychopaths” (p. 414). The psychopath presents with symptoms similar to patients with orbitofrontal-ventromedial lesions, they assert, particularly when damage is localized in the dorsolateral area (Raine & Scerbo, 1991; Yeudall et al., 1987, as cited in Roussy & Toupin, 2000). Symptoms include impulsivity, behavioral inhibition, loss of guilt and shame, sexual promiscuity, and antisocial tendencies. Abnormal galvanic skin response in anticipation of aversive events is also a common response in both psychopathic as well as sociopathic populations (Damasio, Tranel, & Damasio, 1990). These authors stress, however, that none of this research is definitive. In a review of animal and human studies by Giancola (1995), the dorsolateral region of the frontal cortex was involved in the expression of physical aggression. Neuropsychological studies in individuals with Cluster B personality disorders (borderline, antisocial, histrionic, and narcissistic) also indicate that these individuals exhibit a variety of executive (prefrontal) and memory (temporal) function deficits (Vollm et al., 2004).

4. Neurochemistry in psychopathy

In addition to governing the executive functions, the prefrontal region of the brain also appears to play a critical role related to abstract reasoning, attentional control, working memory, integration across space and time, anticipation, and planning (Luria, 1973). While the amygdala, for example, stimulates instinctual behaviors such as hunger, sex, aggression, and other strong emotions, the orbital cortex inhibits those behaviors. The key is balance and a healthy modulation. This is where neurochemistry comes into play. Dopamine (DA) levels will most certainly be affected in this interplay taking place in the brain, as will other neurotransmitters.

Neurotransmitters are chemicals in the brain through which the electrical transmission of impulses travel and information is processed. Neurotransmitters are mainly active in the central nervous system and higher level cognitive functioning. These chemicals are not always directly involved with regulatory processes that occur in the autonomic nervous system; those processes are under the control (for the most part) of hormones (Fallon, 2006). The key concern for neuroscientists in studying the effects of these chemical/hormonal actions on the brain is when neurotransmitter levels become imbalanced. This imbalance appears to be the issue in many psychological, pathological, and personality disorders (including Antisocial Personality disorder).

In the criminal psychopath, desire rules the day, and the lack of impulse control and behavior inhibition in these individuals could be a sign of neurotransmitter imbalance. According to Palmer (2005), who works in the area of psychobiological criminology, there is an appetitive (predatory), searching phase the psychopath goes through, and then a consummatory (fulfilling) phase. The hormonal arousal/reaction the psychopath seeks will either be his or her own or that of the victim's. This is where pheromones come into play. Pheromones are chemical substances, which, when secreted by the body into the environment, can cause behavioral reactions in others of the same species. Testosterone and androgens, says Palmer, are the most important hormones studied in criminology, while serotonin is probably the primary neurotransmitter studied in criminology. Also according to Palmer, serotonin (5-HT), dopamine (DA), and norepinephrine (NE) are the three most common neurotransmitters studied by criminologists, as antisocial individuals tend to have lower serotonin levels than controls. This population of individuals also has lower NE (norepinephrine — a neurotransmitter and a hormone) levels, and according to other researchers, epinephrine (adrenaline) levels are severely limited in them, which could account for their need of high arousal.

5. Conclusion

For the average person, the thought of living life without conscience, without feelings of remorse or guilt or shame for personal wrongdoing, and especially for pain and suffering inflicted upon others, is unimaginable. How an individual would conduct his or her self in the absence of internal restraints is so completely outside the average person’s experience that any attempt to answer such speculation can only point us to the psychopaths among us. The incidence of psychopathy has such a deep, profound, and terrifying impact on society that it is surprising how little the majority of the population know of it.

References


