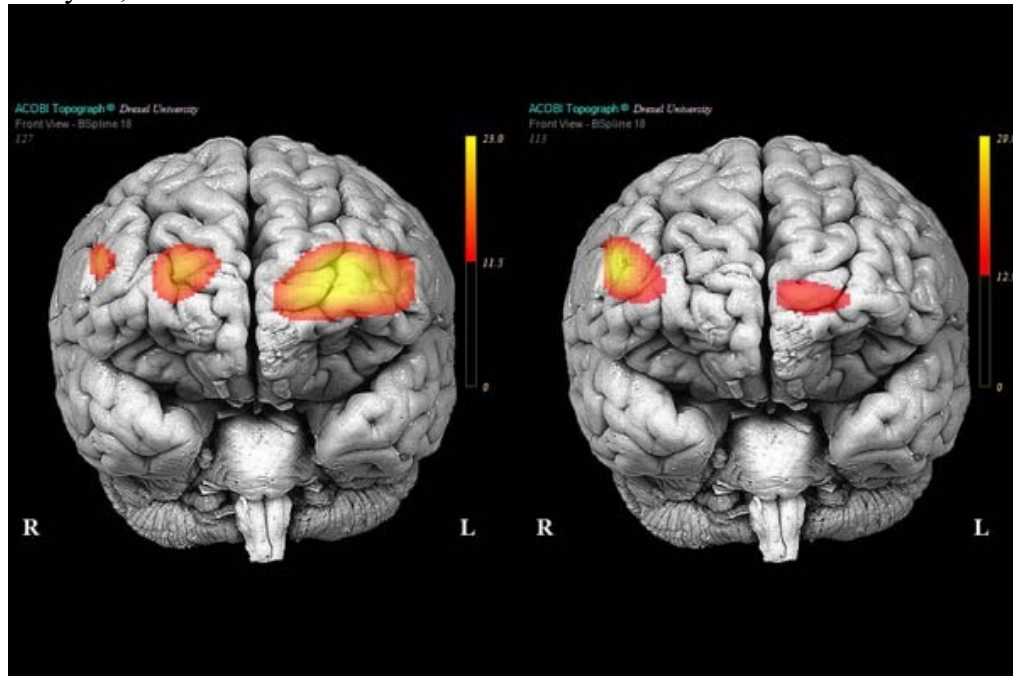


Its All In Your Head: Borderline Personality Disorder and the Brain

The field of psychiatry is heating up and neuroscientists are discovering what's going on in the mind during the fog of mental illness

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What makes a brain *Borderline*? For the last two decades experts have been trying to find out. The old adage about two people being on different wavelengths appears to be true, with MRI scans revealing stark differences between healthy brains and the brains of individuals with Borderline Personality. The diagram above is a case in point. On the right we have a 'normal' brain, on the left the brain of someone with BPD. The heat signatures, show for the first time the neurological basis of a serious but all too common mental health condition.

But what do these heat patches actually mean? We begin in the *limbic system*; all brains have one. It is the emotional control centre for human beings, and it is here that trauma, mental illness, and neural circuitry intersect.

Amygdala

The primitive part of the brain which regulates fear and aggression. In the general population it's a vital tool for survival; even in the comfortable, safe, clockwork cities of modernity, emotions can be lifesaver. However:

Brain scans have shown people with BPD have amygdala's that are noticeably smaller than the general population, and may even have undergone atrophy. The smaller the amygdala, the more overactive it is.

This means when people with Borderline Personality Disorder, experience an emotion, they do so more intensely than the general population, and the 'cooling down' period takes much longer.

Hippocampus

Latin for 'seahorse' the hippocampus is a pair of seahorse shaped tubes located in left and right hemisphere of the brain. Associated with long and short-term memory, spatial-orientation, and most importantly emotional reactions, it is the body's data processor. This means, when an environmental event is relayed via the visual cortex, the hippocampus decides the correct emotional response. Approach or avoidance.

For people with Borderline Personality Disorder, the hippocampus is in a state of continuous hyperarousal. Uncoordinated and dysfunctional, it consistently misinterprets threats, and relays faulty messages back to the amygdala.

This means people with BPD are more than likely to encounter other people, and the world around them, as threatening, when this very well may not be the intent or the reality.

Hypothalamic-pituitary-adrenal axis.

A complex name for three interconnected glands: The hypothalamus, the pituitary, and the adrenal gland all interact with each other. Especially in managing the pressures of daily life and maintaining homeostasis.

The 'Hypothalamic-pituitary adrenal axis', is primarily responsible for the body's production of cortisol. Cortisol is a natural chemical released during times of stress. Studies have shown people with BPD have abnormal levels of cortisol in their bloodstream.

Too much Cortisol production, means stress levels in daily life are always overwhelming. Psychologically, resilience and coping skills are undermined, chemically, the body is overwhelmed.

Prefrontal Cortex

The prefrontal cortex is the pinnacle of human evolution, not only because it's responsible for reason, rationality and decision-making but because it is also inhibits our primal nature.

People with BPD have prefrontal cortexes which are inactive and inefficient. This is one of the reasons for some of hallmark symptoms of BPD including impulsivity.

As Francisco Goya said, the ‘sleep of reason breeds monsters,’ and with a sleeping prefrontal cortex, individuals with BPD find themselves assailed by emotions, which make us feel out of control.

Conclusion

Of course this appears a raw deal for someone suffering Borderline Personality Disorder: After all, we are stigmatised with pejorative labels as it is without needing mental impoverishment added. But here’s the twist: The heritability of Borderline Personality Disorder is estimated to be 40–60%, however, 70% of BPD sufferers have experienced some form of childhood trauma; often sexual, physical or emotional abuse.

It remains to be seen whether structural abnormalities in the borderline brain, are the cause of the condition, or a consequence of trauma. An indelible imprint on our brain of suffering.

To give just one example of why it is feasible the brain is ‘injured’ by trauma, is in the chemical cortisol. As we’ve already seen, cortisol is released in a response to stress; and so it goes to reason, extreme stress, especially experienced in childhood and over long periods of time, will lead to abnormal levels of production. Furthermore:

The reason for the atrophy of the amygdala and hippocampus, and prefrontal cortex, is because high levels of cortisol have eroded parts of it away.

This is the cruel irony: The brain is a mirror to life, and if cortisol has chemically eroded the most prized assets of the mind, then this is because stress has eroded core aspects of our lives.

In order to address these startling discoveries about the brain, we need to acknowledge the nature of labels. That BPD is not someone twilight state between sanity and insanity, but a mind that has been worn away by developmental trauma. When we stop blaming individuals, we may start looking more at society. For now, I’ll just keep listening to the experts telling me *It’s all your head*. When I look at the brain scan I can’t help but agree.