Adrian Raine: The Biological Roots of Crime

Takeaway thoughts

Absolutely

When thinking about violent behavior:

Is there something to the idea that , in some number of extreme cases, biology is destiny ? Absolutely . Raine gives us many examples.

Is there something to the idea that, in some number of cases, probably a larger number than above, biology contributes to behavioral outcomes? Yes.

Is there something to the idea that in an even larger number of cases, biological factors, when and only when in combination with certain environmental factors outside the person, contribute to behavioral outcomes? Absolutely.

Is neurocriminology going to continue to draw funding, and popular and scholarly attention? Yes. It holds out the promise that if we can just do enough "big science" with enough high tech machinery then we can figure this all out. It also makes criminology look much more scientific than it has in recent years because it starts to look medical.

It's also clear that the brain is tremendously complex. "Most estimates say we have about 100 billion brain cells (neurons), and about ten times that many, or one trillion, support cells (glia) that help the neurons." (Hefti, 2002)

So, even if we just stick with the structural neuro side, scientists are confronted by a system that is going to be hard to figure out.

All these points are absolutely beyond question.

But, Think About This

But I would suggest there are also some points that are in question.

1. At the same time that there is complexity on the biological side, there is complexity on the environmental side. Whether we are talking different metals getting into the brain, or different aspects of nutrition, or attributes of the pre-natal or family or social environment, there are many potential factors. So if we are interested in gene x environment interactions or neuro x environment interactions, how do we figure out which interactions are relevant?

2. What is the causal status of the neurological/biological/genetic factors, or each of these in interaction with environmental factors, to specific violent outcomes? This gets into complicated questions in philosophy of social science about causal status and necessary and sufficient conditions (see Jepperson & Meyer, 2011). It is clear that all human behavior has biological substrates, and much human emotion and cognition has neurological substrates. But what roles do these factors, on their own or in interaction with environmental factors, play in causal models? Are they necessary? Are they necessary and sufficient?

3. And might that causal relevance vary not only across outcomes, but also across individuals?

IMHO, Raine structures his introductory vignettes, the Phineas Gage type examples, to present cases where biology as a causal factor is clearly a necessary and sufficient causal condition and sometimes the sole relevant causal condition to the outcomes being investigated.

There is no doubt that in cases like Charles Whitman, discovered upon autopsy to have a large brain tumor, biology was a key contributor. But suppose he had not been trained as a Marine sniper?

http://www.youtube.com/watch?v=HTU5lPzKvjI

Such cases are lurid and fascinating, but how representative are they of violent offenders?

To put the question differently, how can we routinely determine the causal relevance of biological/neurological factors when we do not routinely have available biological/neurological factors?

Of course, on the genetic side we have the FBI's enormous CODIS database, and pushes in many state legislators to expand DNA testing. But there are enormous *and essentially insurmountable* hurdles (Taylor et al., 2007).

Although genetic information may be routinely available for all offenders in the next few decades, in a democratic and cost-conscious society, it is difficult to imagine that such genetic data would be regularly analyzed for markers, or that even-more-expensive-to-collect neurological data would routinely be available.

4. Lacking the above data, we are left with a crucial strong inference (Platt, 1964) question. Can criminal justice prediction, for things like recidivism or failure to appear at trial be predicted better if we add biological/neurological/genetic information to our prediction toolkit? If we simply ignore the causal pathways question, and focus on main and interaction effects based on bio/neuro/genetic factors, do we do better than we would without those bio/neuro/genetic indicators? And what does better mean if the false positive problem is exacerbated?

5. Most importantly, "science must be understood as a social phenomenon" (Gould 1981: 21), even when the data collected appear extremely scientific. What appears extremely scientific depends on the era. "What craniometry was for the nineteenth century, intelligence testing has become for the twentieth" (Gould 1981: 25), and functional MRI data are for the twenty first. At the time, each of these appears to be "rigorous and respectable science" (op cit).

Bean's 1906 data on front vs. rear corpus callosum ratios (class handout) is cautionary (Gould 1981: 77), as are Lombroso's data as well.

Be Aware of a Wider Controversy

There is a huge controversy around the scientific contribution of neuroscience to fields like criminology and of course psychology. “Some social-scientific work based on neuroimaging has been criticized for overstating the tool's ability to ‘read minds’” (Ruark, 2008).

In the area of law and culpability, this creates an interpretationproblem, also probably insurmountable.

> If brain scans are to play a scientifically legitimate role in determining criminal responsibility or in reducing a defendant’s sentence, they need to be able to assist us in answering legal questions. That means, at bottom, that they must be amenable to being deciphered in such a

way that they bear narrowly on potentially excusing or mitigating mental states, such as damaged capacity for reason or an impaired ability to form intent or exert self-control. As we will discover, the extent to which brain scans provide such guidance is more limited than many people realize. (Satel & Lilienfield, 2013).

References

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