outside the box

We are today witnessing the creation of a new phrenology with these wildly exaggerated claims

Early in the 19th century a new 'science' came into existence called 'phrenology'. Phrenologists believed that the shape and unevenness of a head or skull indicated a person's intelligence and character traits. This was based on their belief that the brain comprised distinct areas (called 'organs'), each of which had a different function (for example an 'organ' for intelligence). The size of an 'organ', they argued, was a measure of its power, and determined the shape of the skull. So measuring the surface of the skull would provide an accurate picture of a person's psychological abilities and tendencies.

Like so many popular sciences, the phrenologists were only interested in evidence that confirmed their ideas. Phrenology societies were established and 'scientific' journals were published. At the dawn of the 20th century, nearly 100 years after it was first described, phrenologists were still attracting mass audiences to their lectures and 'skull reading' sessions. Phrenologists campaigned vociferously for their theories to be applied to medicine, education and criminal reform, and suggested that phrenology could be used to determine the most suitable career for young people.

Phrenology eventually became unfashionable and gradually degenerated into a sect of zealous extremists and the practice slowly disappeared. But its legacy lived on in other projects of measuring and comparing human heads – most notoriously, the attention to cranial size and forehead shape that was used by late 19th and early 20th century racial anthropologists (and, later, Nazi anthropologists) to confirm their belief that Europeans were superior to other races.

Some professionals and academics, including me, are concerned that we are today witnessing the creation of a 'new phrenology'. In the last couple of decades many inventions have given us a new window on the brain. We have computers that can generate a three-dimensional x-ray picture of a person's brain, allowing us to measure the size of different structures and different parts of the brain. We have new kinds of brain imaging devices that allow us to see the brain in action. Thus we can track and measure blood flow to different parts of the brain, or, by tracking its energy uptake, see which parts of the brain are active during particular actions or thoughts.

These new brain scans have caused much excitement in the psychiatric community and researchers have set about measuring the size of brains and their blood flow and energy uptake patterns in people with a variety of psychiatric diagnoses, in an attempt to find evidence of differences in their brains compared with the rest of the population. No markers in the brain have been found for any of the psychiatric diagnoses studied; nor has scanning revealed any clinical abnormalities in the brain linked to specific disorders (as you may find, for example, after a head injury). But this failure has not stopped many academics making wildly exaggerated claims about these brain scan studies.

For example, claims are made that brain scans of children with ADHD show they have marginally smaller frontal lobes, and that the brains of some people with schizophrenia show ventricular enlargement, which is then claimed to be a 'cause' of schizophrenia, and 'proof' that such conditions are 'real' medical/biological diseases. Criticisms of these studies (and the interpretations of their significance), such as the possibility that these measurable differences may be caused by factors such as gender, medication, or simply 'normal' variation, are ignored. So too are more complex ideas about brain development, such as the suggestion that the differences may be the result of adverse environmental experiences, given that we know that the brain is a 'pathoplastic' organ – that its development is not fixed at birth by genetic make up but is constantly changing as it grows, in response to environmental stimuli. Furthermore, some functional brain scanning studies (like blood flow and energy uptake) show that similar changes occur when a person recovers from a 'mental illness' (such as depression or obsessive compulsive disorder), whether they receive medication or psychotherapy. This suggests the differences observed in functional brain scans are likely to be a reflection of the way a brain functions in different mental states rather than the cause of these mental states. We can only hope that the crude theories this new phrenology has helped generate will die out in the same way the old phrenology did.

The monthly column by consultant child psychiatrist Sami Timimi that tests the boundaries of mental health politics and practice

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