

Kaleidoscope

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Sukhwinder S. Shergill**Is there still a role for neurosurgery in psychiatry in 2015?**

Proof-of-concept work by a Korean team¹ assessed a novel, minimally invasive, non-cranium-opening technique in four patients with refractory obsessive–compulsive disorder (OCD). With just local anaesthetic to the scalp, magnetic resonance-guided focused ultrasound (MRgFUS) was utilised to thermally ablate the anterior limb of the internal capsule bilaterally. Unlike many other invasive procedures, this neuroimaged technique affords real-time monitoring of lesion induction and the patient's neurological and psychological status. The treated individuals showed a gradual improvement in their OCD, with mean symptom reductions of about a third over the 6-month follow-up period, and almost immediate and sustained improvements in depressive and anxiety symptoms. No neuropsychiatric sequelae were seen in this limited sample, which certainly compares favourably with existing techniques. Psychosurgery evokes unsavoury images of the past, and it is uncertain how much will there be for such work: in an evidence-based profession, let the data lead.

How much longer do psychiatrists need to wait before brain scanning offers diagnostic or prognostic value?

Two papers have recently asked this personalised medicine question in different disorders. Longitudinal structural and functional imaging in 118 individuals with major depressive disorders² suggests a division into three clinical progression groups: chronic ($n=23$), gradually improving ($n=36$) and rapid remission ($n=59$). Comparison of the initial scans with subsequent outcomes showed that those with a chronic trajectory could be delineated from the others – with greater accuracy than could be achieved from clinical data – based upon their initial functional imaging response to an emotional processing task. Hahn and colleagues³ asked the question: can neuroimaging predict the response to a therapeutic intervention – in this case, comorbid panic disorder and agoraphobia treated with cognitive–behavioural therapy (CBT)? Medication-free individuals received behaviour exposure therapy twice weekly over 6 weeks, with a functional MRI scan at baseline. Examination of the fMRI data using a machine learning classification algorithm produced an accuracy rate of almost 80% in predicting individuals' treatment responses. Perhaps it is time for us to start brushing up on our neuroanatomy – to be in a position to explain these findings to our patients.

The environment affects both well-being and rates of mental illness; 'social capital' and 'collective efficacy' are concepts used to describe the micro-environment with respect to psychological health. With psychotic illness, there is an established relationship with increasing levels of urbanicity, minority ethnic status, and social exclusion. Prospective first-contact incidence data from The Hague⁴ have demonstrated a broader range of social factors to be associated with the incidence of psychosis. *Neighbourhood* social characteristics were found to have a stronger relationship with illness than the conventional *individual* factors of age, gender, marital status and ethnicity. Local socio-economic level and residential mobility had the strongest association, but high crime level, ethnic diversity, low voter turnout, and population density were also significant predictors. The authors

found a strong correlation between cumulative neighbourhood social disorganisation and the incidence of psychotic disorders. The father of social anthropology, Montesquieu, wrote that 'all men are born equal, but they cannot continue in this equality, society makes them lose it'. The impact of society clearly warrants greater attention. The relevance of society, structure and environment in the practice of medicine is the focus of the 2014 Reith Lectures:⁵ while a departure for Kaleidoscope in covering multi-media resources, Gawande reviews the importance of the environment in medicine, with a view to examining the reasons why doctors fail and the idea of well-being in medicine.

Building up social capital in teenagers through obtaining a summer job reduces violent behaviour according to a recent report in *Science*.

A total of 1634 disadvantaged children from Chicago schools with high rates of violent behaviour were randomly assigned to either a control group, who could occupy themselves any way they chose, or an intervention group given an 8-week summer job in minimum-wage employment with a mentor and, in half of these, a CBT-based social-emotional learning programme. Relative to the control group, the active intervention group showed a 43% reduction in violent crime; but not in regard to property or drugs arrests. Is the key factor that having a job leaves less time to engage in crimes? Apparently not: the effect of the intervention at 16 months was 7 times *stronger* than the first measurement after the 8-week summer programme, suggesting a long-term effect of the relatively short-duration intervention. It appears that the demands of employment, particularly self-control and social information processing, have a positive impact in the disinclination to engage in violent crime.

Bankers, meanwhile, often score highly on 'capital', but do less well in public perceptions of 'social'. Does their media portrayal as avaricious, amoral people have any scientific credence? In a study in *Nature*

128 bank employees were randomised into two groups given different 'priming' questionnaires: a 'professional identity' primer asked half about their professional role as a banker; and a control group were asked innocuous questions unrelated to professional life. Participants were then told to toss a fair coin 10 times, and anonymously report the results. A successful toss would win them \$20, thereby allowing total earnings of up to \$200. However, to make it competitive, they were also told they would only earn their payoff if it exceeded a randomly selected participant's winnings, adding pressure to favour dishonest reporting. Those primed with professional-identity questions reported winning rates of 58%, significantly above chance and also higher than the 51.8% of bankers in the control priming condition. In analyses to control for demographics and personality variables (such as competitiveness) no effect was found, suggesting that the predisposition to dishonesty can be awakened by being reminded you are, in fact, a banker. This finding was not demonstrated in other professional groups, and it would appear that the very culture of banking inculcates dishonest behaviour.

War, genocide, and horrific trauma afflict far too much of the world in a seemingly never-ending cycle that particularly blights the poorest and most vulnerable.

The psychosocial tolls are hard to calculate, though between a fifth and half of post-war communities may show evidence of post-traumatic stress disorder (PTSD). Such societies often have scant resources and few appropriately trained staff to direct towards the inevitable mental health sequelae, leaving most to endure their difficulties without any support. In Rwanda, Jacob and colleagues⁸ tested a 'train the

trainer' (TTT) model for treating PTSD. Expert therapists taught a first generation of local psychologists (with undergraduate-level psychology training) the brief intervention narrative exposure therapy (NET) over 18 days of training; and those so taught in turn similarly disseminated this to a second cohort of native professionals. Clinical outcomes were similarly positive in those treated with eight weekly sessions by both groups – the first comparing those randomised to NET with those on a waiting list, the second group treating individuals who had been on the waiting list – with significant gains maintained at 1-year follow-up. Results demonstrate a TTT model is viable and effective, and might provide a useful means of disseminating appropriate care in impoverished and initially low-skill regions.

Finally, the Kaleidoscope team loves a good curry. We were therefore especially pleased with a paper in *Neuropsychopharmacology*⁹ noting that a diet rich in curcumin – a yellow pigment found in the spice turmeric – hinders pathologically aversive memory processing. Curcumin has a rich tradition of use as an anti-inflammatory and antidepressant, and there are data demonstrating this so-called 'nutraceutical' can elevate monoaminergic levels in the brain. In this study rats were given either a curcumin-enriched or standard feed, and exposed to fear conditioning experiments. As well as impairing the consolidation of a newly acquired auditory Pavlovian fear memory, dietary curcumin also reduced their reactivation in an enduring fashion. Given the limited effectiveness of existing antidepressants in PTSD – about half fail to show a response to selective serotonin reuptake inhibitors – as well as the potential issues of waiting times and,

for some, the unacceptability of talking therapy, alternative interventions are undoubtedly welcomed.

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