SPIRITUAL HEALING & MENTAL ILLNESS

Vaibhav Mokashi

Over the last decade, the influence of religion on recovery from severe mental illness has emerged as an important idea amongst clinical psychologists. Health professionals have found that spirituality quickens recovery by playing a role in stress reduction (e.g. through prayer), improves a patient's sense of well-being, and lends guidance or structure to afflicted individuals.[1]

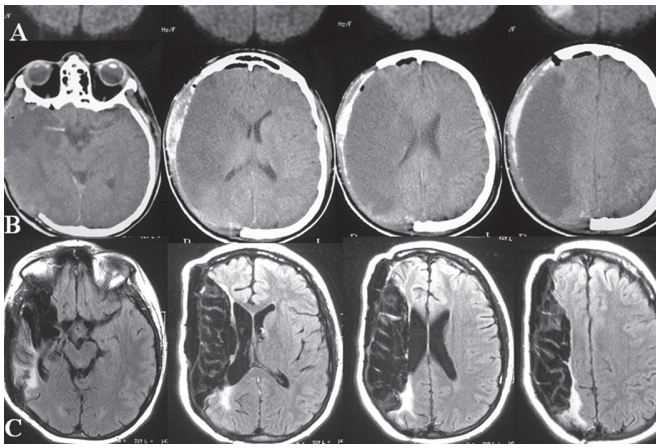
A study conducted by Webb et al.[3] investigated how positive religious support could aid recovery in 81 adults with several mental illnesses such as schizophrenia, depression, or bipolar disorder. Recovery was assessed using a Recovery Assessment Scale which comprised of 41 questions related to the participant's personal confidence, willingness to ask for help, reliance on others and motivation to succeed. The study found that religious support resulted in a statistically significant improvement in the subjects' mental states.

The results of this study have important implications for health professionals as it encourages them to become more cognizant of spiritual issues and possibly make use of the patient's existing religious community in treatments.[4] For example, in the United States, several religious professionals and ministries with training in mental health have been able to promote recovery.[5] In conclusion, spirituality and religion can be positively utilized in future therapies to help individuals recover from severe mental illness.

[1] *Sullivan WP. Recoiling, regrouping, and recovering: first-person accounts of the role of spirituality in the course of serious mental illness. New Dir Ment Health Serv 1998 Winter;(80):25-33.*
[2] *Huguelet P, Mohr S, Jung V, Gillieron C, Brandt PY, Borras L. Effect of religion on suicide attempts in outpatients with schizophrenia or schizo-affective disorders compared with inpatients with non-psychotic disorders. Eur Psychiatry 2007 Apr;22(3):188-194.*
[3] *Webb M, Charbonneau AM, McCann RA, Gayle KR. Struggling and enduring with God, religious support, and recovery from severe mental illness. J Clin Psychol 2011 Dec;67(12):1161-1176.*
[4] *Huguelet P, Mohr S, Borras L, Gillieron C, Brandt PY. Spirituality and religious practices among outpatients with schizophrenia and their clinicians. Psychiatr Serv 2006 Mar;57(3):366-372.*
[5] *Stetz KM, Webb M, Holder A, Zucker D. Mental Health Ministry: Creating Healing Communities for Sojourners. Journal of Religion, Disability & Health 2011 April-June 2011;15(2):153-174.*
Image adapted from: http://www.time.com

NEUOTRAUMA AND THE RESCUE PRINCIPLE

Ilia Ostrovski



The rule of rescue is "the injunction to rescue identifiable individuals in immediate peril regardless of cost".[2] The human proclivity to abide by this principle is demonstrated in accounts of sailors risking their lives to find a shipmate lost at sea. Recently, the moral implications of abiding by this principle have come into question in deciding whether or not to perform a decompressive craniectomy (DC) on patients with a severe brain injury.

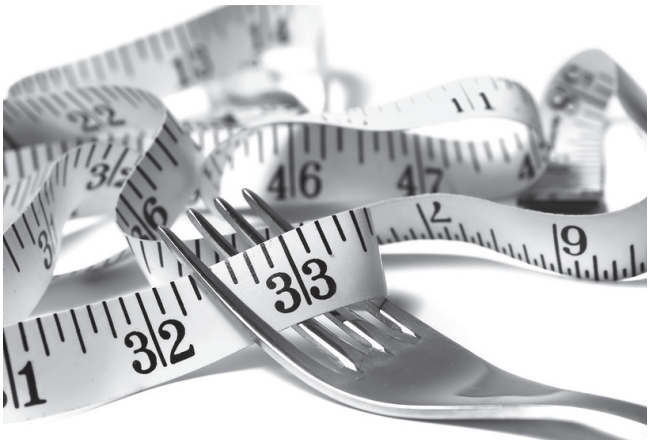
The procedure, which entails removing a large section of the cranium to relieve swelling-induced pressure, is extremely expensive and often results in severe life-long disabilities for the patient. A newly derived model for indexing brain injury severity was tested to determine to what extent it could predict the outcome of patients receiving a DC. The study compared groups with above and below an 80% prediction of an unfavourable outcome. In the >80% group, only 12.5% of the patients had a favourable outcome ($p<0.05$). Conversely, in the <80% group, 83% of the patients returned home, with only 6% requiring nursing home care ($p<0.05$).[2]

Difficulty arises when deciding to perform a DC since the risk involved with this procedure is high. Additionally, large opportunity costs are associated with this decision-making process since consequences of the decision may not be appropriate for the patient. Physicians are put in a difficult situation since they must draw the line between morals and health benefits.

[1] *Honeybul S, Gillett G R, Ho K M, Lind C R P, J Med Ethics 2011;37:707-710*
[2] *Cookson R, McCabe C, Tsuchiya A. Public healthcare resource allocation and the Rule of Rescue. J Med Ethics 2008;34:540*
Image adapted from: http://www.stroke.ahajournals.org/content/38/9/2506/F3.expansion

HOMEOSTASIS: THE PRISON WARDEN OF OBESITY

Khizer Amin



After numerous debunked diet fads and weight-loss plans that promised everything but failed to deliver, the Western world has come to realize the difficulties of not only losing weight, but also keeping it off.

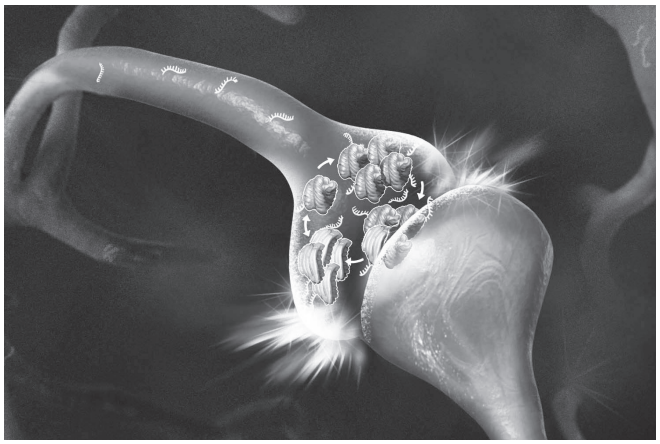
A recent study by Dr. Joseph Proietto and colleagues at the University of Melbourne suggests that long-term biological changes in persons who are obese play a considerable role in hindering weight loss. Fifty men and post-menopausal women with body-mass indices between 27 and 40 were recruited to the study. For ten weeks, the participants were restricted to low-starch vegetable drinks, which provided 500-550 calories per day. Participants then entered the weight-maintenance phase, in which they returned to the consumption of ordinary foods, in amounts and ratios that were suggested to them by dietary experts. Follow-up occurred every two months for a span of one year.

It was found that weight-loss resulted in significant alterations in levels of appetite-mediating molecules, such as leptin, insulin, and gastric and pancreatic polypeptides. These changes were a homeostatic response in order to promote the regain of weight, and were consistent with the increase in appetite that was reported by participants. The researchers found that compensatory alterations to weight loss persisted even a year after the ten-week diet, promoting the eventual regain of weight. This persistent biological transformation highlights the importance of finding diets that can be maintained permanently.

Sumithran P, Prendergast LA, Delbridge E, Purcell K, Shulkes A, Kriketos A, et al. Long-term persistence of hormonal adaptations to weight loss. The New England Journal of Medicine, 2011;365(17):1597–604.
Image adapted from: http://www.emedicbuzz.com

THE BIOCHEMISTRY OF LONG-TERM MEMORIES

Keith Lee



The brain stores memories by forming connections between individual nerve cells. During learning, these connections, known as "synapses", change in number and strength as a result of alterations to their protein compositions. Long-term memory formation involves maintaining these changes over long periods of time. However, how this maintenance is achieved has remained a mystery to neuroscientists.

Recently, researchers at the Stowers Institute for Medical Research discovered a synaptic protein, Orb2, in the *Drosophila* fruit fly that appears to be essential for the formation of long-term memory. Orb2 is a self-complementary protein, able to stack with copies of itself to form oligomers located within neurons. After determining that stimulation of neuronal synapses increases Orb2 oligmerization, the researchers tested whether oligomeric Orb2 is essential for memory formation. Introduction of a point mutation to reduce Orb2 oligmerization prevented the fruit flies from stabilizing long-term memory beyond 24 hours, a phenomenon not experienced by wild-type *Drosophila*. This suggests that oligomeric Orb2 plays an important role in the persistence of memory.

The discovery that oligomers are involved in memory formation has numerous implications. In addition to providing insight into the complex workings of the brain, this finding also sheds light on many memory-related diseases, such as Alzheimer's, caused by the accumulation of toxic oligomers. Further research in this area can give us a better understanding of when and how oligomers are detrimental to our health.

Majumdar A, Cesario W, White-Grindley E, Jiang H, Ren F, Khan M, et al. Critical Role of Amyloid-like Oligomers of Drosophila Orb2 in the Persistence of Memory. Cell. 2012 Jan 26.
Image adapted from: http://www.newswise.com

THE DEBATE OF COGNITIVE NEUROENHANCEMENT

Shelly Chopra

Cognitive neuroenhancement (NE), the process of improving one's intellectual abilities, has been debated by the scientific community since the development of psychostimulatory drugs. At face value, the principle behind NE seems simple yet lucrative: the development of a pill to better one's brainpower and thus one's operative performance at school or work. However, unpacking the physiological, moral, and social implications of NE reveals how the notion is still in its infancy in the domain of non-therapeutic interventions.[1]

One of the largest challenges lies in the fact that many psychostimulants, acting through dopaminergic pathways, have both positive and negative effects. While dopamine is able to mediate learning and one's intelligence quotient (IQ), overstimulation of the dopamine pathway causes addiction, a key side effect of most psychostimulants on the market today. This duality complicates research in NE and calls into question the potential benefit of psychostimulants. However, if one day the cognition-enhancing effects outweigh the counter-regulation of psychostimulants, is their marketing as neuroenhancers ethically justifiable? Social pressures to conform to the use of neuroenhancers for one's intellectual performance parallel the manner in which athletes are often intimidated–by their opponents' physical abilities–into using steroids. Although the average person faces many social pressures today, the key distinction between the purchase of a popular gadget and ingesting a NE drug is that the latter intervenes directly at the neurobiological level.[2] One's sense of self and self-efficacy will be affected at the neuronal level in addition to the social burdens experienced when using a psychostimulant.

Although present for a number of years, the debate on the value of NE seems to have just begun. Further empirical research will determine what, if any, psychostimulants should be tested for cognition-enhancing effects in healthy individuals.

[1]Heinz A, Kipke R, Heimann H, Wiesing U. Cognitive neuroenhancement: false assumptions in the ethical debate. J Med Ethics 2012 Jan 6.
[2]Galert T, Bublitz C, Heuser I. Das optimierte Gehirn. Gehirn & Geist. 2009.
Image adapted from: http://www.healthcarereformmagazine.com

PUBLIC HEALTH & THE DRUG RESISTANT TB

Lebei Pi

Recent reports of the emergence of an incurable form of tuberculosis at the Hinduja Hospital in Mumbai, India have raised concerns regarding increasing drug resistance to the disease. Researchers in Mumbai have identified 12 patients with so-called totally-drug resistant tuberculosis (TDR-TB) that appears to be resistant to all known treatments.[1] Zarir Udwadia, a physician at the Hinduja Hospital who has been treating the patients, attributes the issue of drug resistance to poor management of the disease and a failure of public health in India.[1] In particular, government-run health facilities in India are viewed negatively by the public due to chronic underfunding and understaffing, effectively forcing desperate TB patients to seek care from private physicians who tend to be unregulated in both prescribing practice and qualifications.[2] In fact, a study conducted in Mumbai showed that the vast majority of prescriptions written by private physicians practicing in Dharavi for hypothetical TB patients were inappropriate and would have further amplified drug resistance.[3] This problem is exacerbated by poor infection control in health settings and the lack of laboratory infrastructure to identify and confirm TB diagnoses, creating a breeding ground for infection and drug resistance.[1] So far, only about 1% of those who have developed multi-drug resistant TB have had access to the Directly Observed Therapy, a Short Course program that treats normal TB. However, the Indian government has failed to provide treatment for the rest of the population living with TB, due to its high cost – US$4000 per patient for TB alone, compared to the $45 the government actually spends per capita on health care in general.[1,2]

[1]Loewenberg S. India reports cases of totally drug-resistant tuberculosis. The Lancet. 2012 Jan;279(9812):205.
[2]Udwada ZF, Amale RA, Ajbani KK, Rodrigues C. Totally drug-resistant tuberculosis in India. Clinical Infectious Diseases [Internet]. 2011 Oct [cited 2012 Jan 28];0. Available from: http://cid.oxfordjournals.org.libaccess.lib.mcmaster.ca/content/early/2011/11/24/cid.cir889.full.pdf+html
[3]Udwadia ZF, Pinto LM, Uplekar MW. Tuberculosis control by private practitioners in Mumbai, India: has anything changed in two decades? PloS One. 2010;5(8):1-5.
Image adapted from: http://www.guardian.co.uk