

MIND THE GAP

The ethics of neuroscience

Post show discussion triggers



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“What will happen to our sense of personal responsibility if morality and immorality, violence and sexuality are ‘located’ to our genes or to nerve cells? And when new targeted drugs are available to manipulate our moods, control our behaviour, heighten our intelligence, alter our memories? The future of the brain is upon us, and the time to think about its implications is now.”

Professor Steven Rose

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Discussion Trigger 1: Understanding panic attacks

SCRIPT	<p>VIJAY: My god! My hands have gone numb.</p> <p>MAYA: Calm down boy.</p> <p>VIJAY: Christ what is this? I am about to be mugged by an old woman and a green grocer?</p> <p>MAYA: You're having a panic attack.</p>
COMMENT	<p>In this scene Vijay appears to be having a panic attack</p>
ISSUES/PROMPTS	<ul style="list-style-type: none">• What is a panic attack?• What do you think are some of the causes of panic attacks?• Why do people have panic attacks?• Do they serve a purpose? Do they alert a person to a dangerous or difficult situation?• Should drugs be used to help a person cope better with that situation or should they just learn to 'get over it'?• Do you think Vijay has always experienced panic attacks?• Why do you think Vijay started experiencing panic attacks?• Do you think Vijay was a weak person and that is why he experienced panic attacks?

Discussion Trigger 2: The pursuit of biohappiness

SCRIPT	<p>SILAS: Take some prozac, wash it all down with soothing talk, Vijay..we are after all entering the golden age of biotechnology! We are all in the pursuit of biohappiness.</p>
ISSUES/PROMPTS	<ul style="list-style-type: none">• Could a pill for 'instant happiness' ever be developed?• Should we pursue happiness through biotechnology?• What is the difference between using illegal drugs such as ecstasy or alcohol to enhance our mood, feeling of well being and legal prescription drugs such as prozac?

Discussion Trigger 3: Altering our Brains

SCRIPT	<p>SILAS: Being able to alter our brain is so attractive not only to the sick and the suffering but everyone who desires to feel younger, feel happier, perform better!!</p> <p>VIJAY: Wait, curing diseases is different from wanting just to feel good man, to be some sort of perfect person</p> <p>SILAS : The neurons in your head don't know that. They just react to whatever drug you give them. Why shouldn't we push those boundaries Vijay? Why wait passively for millions of years before evolution offers a better brain? If you could just improve concentration, grab that competitive edge – Maya could be remembering where she left her shoes, you could be remembering the answer to the question on your GCSE maths paper! Where's the harm?</p>
COMMENT	<p>Ritalin can be used for children and adults who do not have ADHD but find that these drugs improve their intellectual performance, particularly in the USA. Is it right or wrong to do this? We seek to improve ourselves 'artificially' in other ways (e.g. our looks, our physique and our health) so is it wrong to improve our brains?</p>
ISSUES/PROMPTS	<ul style="list-style-type: none">• Should the goal of research be solely to relieve the sick and the suffering or to enhance healthy people's lives as well?• Can we ever control how the benefits of research are used i.e. only using those benefits to help the sick and the suffering?• How should they be controlled?• Why is it so attractive to alter our brain?• What are the arguments against Silas's view on drugs?

Discussion Trigger 4: Normality

SCRIPT	<p>DINO: She just wants to be normal again</p> <p>SILAS: Is normality a medical condition? Is the goal of research to try and make every one normal?</p>
COMMENT	<p>Is the goal of research to try and make everyone 'normal?' Apart from the difficulty of defining 'normal' people with some forms of learning difficulty are not unhappy about it and in communities where certain diseases are prevalent, are entirely accepted. Some people with schizophrenia, for example, do not like taking the drugs because of the side effects of them and some prefer the intensity of their experiences. The drugs can make their lives seem bland. Can it be right to enforce people to take drugs to make them socially acceptable? Should medicine aim to cure disease or enhance normality? The concept of Eugenics in the last century had catastrophic consequences but we have to be careful now that we do not go too far to try to preserve and create perfection.</p>
ISSUES/PROMPTS	<ul style="list-style-type: none">• What is normality?• Is normality universal i.e. is it different in different societies?• Should we be trying to change the individual to suit society or should we be trying to change society to fit the individual? I.e. Until recently homosexuality was seen as abnormal and homosexuals have sometimes been given therapies and treatments to make them 'normal'.

Discussion Trigger 5: Remembering

SCRIPT	<p>SILAS : Okay – how do we know what matters and what doesn't.</p> <p>VIJAY: I dunno – we just do</p> <p>SILAS: A good memory is a balance between remembering and forgetting</p>
COMMENT	<p>The most famous case is that of Shereshevskii, the patient who was studied over many years by the neuropsychologist Alexander Luria. Shereshevskii had an apparently inexhaustible memory, recalling not merely complex nonsense formulae, but also the exact context in which he learnt them. His inability to forget made it impossible for him to hold down a career other than as a memory performer. His case poignantly echoes that of Funes, the 'memorous'— the fictional character created by the novelist Jorge Luis Borges:</p> <p>"...[Funes] remembered the shapes of the clouds in the south at dawn on the 30th of April of 1882, and he could compare them in his recollection with the marbled grain in the de-sign of a leather-bound book which he had seen only once, and with the lines in the spray which an oar raised in the Rio Negro on the eve of the battle of the Quebracho ... These recollections were not simple; each visual image was linked to muscular sensations, thermal sensations. ... He told me: I have more memories in myself alone than all men have had since the world was a world ... my memory sir, is like a garbage disposal..."</p>
ISSUES/PROMPTS	<ul style="list-style-type: none">• Would it be a good thing to remember everything?• Drugs to improve memory: useful for people with memory problems but should they be used by healthy people to enhance memory for exams or interviews?• What are the consequences of trying to find a way to retrieve memories?• When would Silas's 'memory' pill be a negative thing and when would it be a positive thing?

Discussion Trigger 6: Forgetting

SCRIPT	<p>SILAS: People who need to forget.</p> <p>DINO: Earthquake survivors</p> <p>SILAS: Excellent Idea!</p> <p>VIJAY: Er, soldiers - back from the war!</p> <p>SILAS: Brilliant, forget the trauma of war!</p> <p>DINO: Victims of war crimes</p> <p>SILAS: It would be like those photos were never taken! Great, keep it coming! Torture victims. Why we could even torture them, get the necessary info, slip them a pill and they'd never know they'd been tortured! Brilliant!</p> <p>Maya: What good comes of forgetting a genocide? No good comes of that.</p>
COMMENT	<p>Should drugs be given to ease the retention of bad memories for victims of crime or disaster relief workers? What impact would altered memories have on 'normal' memory in context with a particular situation? Should people who are traumatised by their memories be treated in other ways?</p>
ISSUES/PROMPTS	<ul style="list-style-type: none"> • What are the consequences of trying to find a way to forget certain memories? • Should scientists aim to develop smart pills to select for certain memories to be wiped out? Who would prescribe them and under what circumstances? • Would it be a good thing to forget traumatic events? • Should all people who have been involved in a traumatic event be given these pills? • Should people who are traumatised by their memories be treated in other ways? • If Dino had been given pills to help him forget the trauma's he experienced as a result of abuse by his father, do you think he would have become an addict and then a murderer?

Discussion Trigger 7: Brain scanners

SCRIPT	<p>SILAS : If we could have scanned Dino’s brain at school age....what if we could monitor, predict, violent behaviour?</p>
COMMENT	<p>According to some experts, there is a real possibility of having brain scanners in schools to monitor and predict behaviour. As such, scanning could potentially identify children who could, for example, be violent. Brain scanners could one day be capable of reading a person’s mind. Who should have this information and how would it be evaluated? What would you do with this information and at what point should the medical and related professions intervene?</p>
ISSUES/PROMPTS	<ul style="list-style-type: none">• Should we monitor a person’s behaviour to predict a predisposition towards violent behaviour? If so, what should we do about it? Put them on drugs to change their behaviour?• Who should have this information?• What might the negative consequences be?

Discussion Trigger 8: Understanding Alzheimer's

SCRIPT	<p>SILAS : Maya's brain that swirled walnut beauty of a hundred billion neurons is slowly changing. Where once thoughts and memories ran along axons bridging that synaptic gap, a tangle of fibrils is blocking the way – a 'poor service', as we say down here, 'signal failure'Vijay, a diagnosis of suspected Alzheimer's is always appalling. She's slipping away and there's nothing anyone can do. It'll end in death.</p>
COMMENT	<p>New drugs to improve memory and cognitive performance in people with Alzheimer's or Parkinson's disease are being developed and so-called Smart Pills could possibly be used by healthy people to produce a 'better than well' condition.</p>
ISSUES/PROMPTS	<ul style="list-style-type: none">• What is Alzheimer's?• Are Alzheimer's and dementia two different conditions?• How does Alzheimer's affect the brain?• Should science focus on young or old brains?• Should the priority of scientific research to be develop a vaccine for addiction or a vaccine for Alzheimer's• What's the difference between young people whose 'heads are messed up' like Dino and the degeneration of the brain in later life?• As a result of advances in medical science, people are living longer and longer. The older you get, the greater your risk of developing Alzheimer's. What are the implications for society?• Maya's mother had Alzheimer's. How do you think it would have helped Maya had she been screened for the gene for Alzheimer's. What do you think are the pros and cons of Maya's sons being screened for the gene for Alzheimer's?

- Animal Experiments – animals are not in a position to offer consent for invasive experiments to be conducted on their brains. To some people the prospect of such work is disturbing. To others the opportunity it offers for advancing our understanding of the nervous system in health and in disease is such that not to pursue it is irrational. Is it right to use animals in medical research to find a cure for Alzheimer's ?
- Drugs that improve concentration are already available; others that enhance memory are in development. How should it be decided whether these medications are used only to treat an underlying illness; such as Alzheimer's disease, or also used to boost a healthy individual's performance?

Discussion Trigger 9: Addiction

SCRIPT	<p>DINO: Addiction is an illness</p> <p>VIJAY: Bull, it's a weakness</p> <p>SILAS : Actually it can be seen as an illness, they're looking to create a vaccine .. the guys down the AA will tell you alcoholism is a disease..in the genes.</p>
COMMENT	<p>If and when it becomes possible to vaccinate against drug addiction, will it be a legal obligation to have that vaccination and if people refused, would they be denied rehabilitation and treatment to help ease addiction? If we enforce vaccination, are we going to force everyone to modify their lives to avoid, say, diabetes or alcoholism – also major burdens on society?</p>
ISSUES/PROMPTS	<ul style="list-style-type: none"> • Is addiction an illness or a weakness, a cry for help or a way to escape? • Are all addictions a bad thing? • Should we try and identify people who may be vulnerable to addiction? • Aren't we all addicted to something? • If scientists proved that addiction to certain drugs legal and illegal was due to genetic inheritance – how might that change our view of addicts? • If addiction to certain drugs changes the brain does that mean the addict is still responsible for their actions? • Should the priority of scientific research to be develop a vaccine for addiction or a vaccine for Alzheimer's disease? • Do we know enough about developing brains to understand the consequences of mind-altering drugs? • Can/should science prevent addiction?

Discussion Trigger 10: Mind altering drugs

SCRIPT	<p>DINO: I reckoned I was well messed up... They'd watch me, I would try anything. Any thing. Any mind altering anything.</p>
COMMENT	<p>"The allure of getting high is so powerful, so seductive, how do we get people off drugs, and keep them from relapsing? These are the questions put to modern science. Rational drug design has helped to develop effective dopamine-blocking agents. Scientists realise, however, that biological treatment mechanisms can only complement psychological and emotional therapies for those addicted to alcohol and drugs." The Dana Source Book Of Brain Science.</p>
ISSUES/PROMPTS	<ul style="list-style-type: none">• Do certain drugs alter the user's brain?• Is Dino using drugs because he has problems or does he have problems because of the drugs?• If the drugs make him feel better what is the problem with him taking them? What is the difference between them and a tablet you take for a headache?• Can science prevent addiction?• Should science prevent addiction?