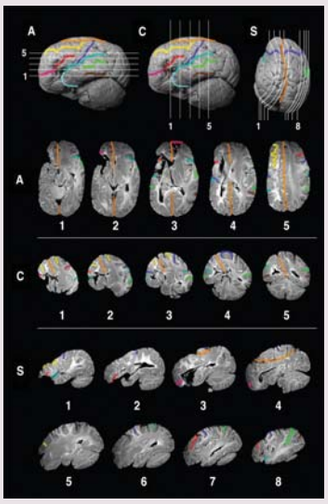
'Tan Tan' regains his identity

Monsieur Leborgne, nicknamed Tan Tan, for that was the only syllable he could utter (save for a swear word or two), died in the care of the neurologist Paul Broca in Paris on 17 April 1861. Arguably the most important case in the history of neuropsychology, Leborgne's death coincided with a debate raging in scholarly circles about the location of language function in the brain. When Broca autopsied Leborgne's brain, he observed a malformation on the left frontal lobe – 'Broca's area' – and concluded this was the site of speech production, a moment that the historian Stanley Finger has described as a 'key turning point in the history of the brain sciences'.



In the January issue of *Journal of the History of the Neurosciences*

Broca was far from being the first person to propose that speech function is located in the frontal lobes (see tinyurl.com/abtq2uv), but crucially, the evidence from Leborgne helped him persuade the academic community. For centuries experts had believed mental functions were located in the brain's hollows; that the cortex (Latin for 'husk') was little more than a rind of tissue and blood vessels. Today, problems producing language are still termed Broca's aphasia in recognition of Broca's landmark contribution, although Broca in fact named Leborgne's problems *aphémie* (meaning 'without speech'). The Greek term 'aphasia' (also meaning 'speechlessness'), adopted by medicine, was coined in Broca's day by the physician Armand Trousseau.

In terms of the historical record, Leborgne is like a mirror opposite of Phineas Gage – another of neuropsychology's legendary cases. The story of Gage's life and infamous accident, in which a tamping iron shot through his brain, has been researched in depth, inspiring books, poems, YouTube skits and snowmen makers along the way. Yet relatively little is known about the brain damage Gage suffered because no autopsy was performed when he died and his brain was never preserved (that hasn't stopped scientists from attempting to simulate the likely damage: tinyurl.com/a6u3ljz).

In contrast, Broca was careful to save Leborgne's brain for posterity. He decided against a full dissection, performing a surface examination only. Today the preserved organ is housed at the Musée Dupuytren in Paris, where Broca placed it. The brain has been scanned numerous times using modern methods, allowing detailed analysis of the location and nature of any lesions. We now know that the frontal lobe damage to Leborgne's brain was more extensive and deeper than Broca had realised based on his superficial examinations. But, contra the situation with Gage, while we are well informed about Leborgne's brain, before now his identity and life story have remained largely mysterious. Broca's medical notes revealed little.

Thankfully, in a new paper, Cezary Domanski at Maria Curie-Sklodowska University in Poland has used archive registers in France to uncover hitherto unknown detailed biographical information about Monsieur Leborgne. Born in Moret-sur-Loing – the picturesque town that inspired Monet and other impressionists – 'Tan's' full name was Louis Victor Leborgne. He was the son of Pierre Christophe Leborgne, a school teacher, and Margueritte Savard. He had three older siblings, Lucille, Pierre and Anne, and two younger siblings, Arsene and Louise.

An epileptic since his youth, it was Leborgne's loss of speech that led to him being hospitalised at age 30. Unmarried, he ended up spending the remaining 21 years of his life in hospital. Before this incapacitation through illness, Domanski tells us Leborgne was a *formier* in Paris, a kind of skilled craftsman who made the wooden forms used by shoemakers in their work. Together with the information on Leborgne's family, this news corrects at least one historical myth. The oft-told idea that Leborgne 'was an uneducated illiterate from the lower social class should once and for all be deemed erroneous', writes Domanski.

Based on his inquiries, the Polish historian offers an intriguing speculation – given that Leborgne's birthplace of Moret was home to several tanneries, Domanski wonders if his repeated utterance of *tan* was somehow connected to childhood memories of the pretty town.

'One thing remains certain,' Domanski concludes, 'the memory of the disease and cause of death of "Monsieur Leborgne" proved far more enduring than the story of his life, which was deemed irrelevant even when the patient was still alive. It is time for Louis Victor Leborgne to regain his identity ...'

In 2009, out of the blue, a photograph was discovered of Phineas Gage (tinyurl.com/a42wram). I wonder if we will ever look upon an image of Leborgne?

Can you will yourself happier?

In the *Journal of Positive Psychology*

'Happiness is as a butterfly, which, when pursued, is always beyond our grasp, but which, if you will sit down quietly, may alight upon you.' (Nathaniel Hawthorne)

A key question for people hoping to improve their well-being is whether it is counter-productive to focus too hard on the end goal of being happier. Philosophers like John Stuart Mill have proposed that it is – he wrote that happiness comes to those who 'have their minds fixed on some object other than their own happiness'. A pertinent study published in 2003 by Jonathan Schooler and his colleagues supported this idea: participants who listened to music with the intention of feeling happier actually ended up feeling less happy than others who merely listened to the music with no happiness goal.

But now a new study has come along which purports to show that trying deliberately to be happier is beneficial after all. Yuna Ferguson and Kennon Sheldon criticise the Schooler study on the basis that the music used – Stravinsky's *Rite of Spring* – is not conducive to happiness, and that's why it interfered with deliberate attempts to feel happier.

Ferguson and Sheldon had 167 participants spend 12 minutes listening either to *Rite of Spring* or an upbeat section from *Rodeo* by Copland. Crucially, half the participants were instructed to relax and

observe their natural reactions to the music. 'It is important that you do not try to consciously improve your mood,' they were told. The other participants received the opposite instructions – 'really focus on improving your mood'.

Afterwards, two measures of mood were taken – one based on six words like 'joyful'; the other a continuous measure of positive feelings. The participants who'd listened to the cheery music, and simultaneously tried to improve their mood, reported feeling in a more positive mood than the participants who'd merely listened to the upbeat music, and the participants who'd listened to the down-beat music, whether they strived to feel happier or not. This was despite the fact that the groups did not differ in how much they'd enjoyed the activity, or how 'pressured' they'd felt to complete it.

A second study was similar, but this time 68 participants visited a psych lab five times over two weeks to spend 15 minutes each time listening to music they had chosen from a pre-selected list covering various genres from folk to hip-hop. Again, half the participants were instructed to focus on the music and not their own happiness (they were told that doing so could backfire); the other half were told to think a lot about their happiness and to try to feel happier (they were told that doing so is beneficial).

At the end of the two weeks, the group who had deliberately tried to feel happier showed an improvement in their happiness levels compared with baseline; in contrast, the participants who had merely focused on the music did not enjoy this benefit. This was despite both groups believing to the same degree that the intervention would make them happier, and both groups enjoying their music the same amount.

'The results suggest that without trying, individuals may not experience higher positive changes in their well-being,' Ferguson and Sheldon concluded. 'Thus practitioners and individuals interested in happiness interventions might consider the motivational mindset as an important facet of improving well-being.'

Sceptical readers may not be so easily persuaded. Because there was no attempt to measure the participants' thought-processes, it's difficult to know how they interpreted and acted on the two forms of instruction. In the second study in particular, even though they were told there was no need, how do we know the participants didn't go to lengths outside of the lab to boost their happiness? From a statistical point of view, the first study lacks any measure of change in mood.

The second study is also complicated by the music-focus group starting out with, and ending up with, a slightly higher average happiness score than the happiness-focus group (albeit these differences were not statistically significant). This raises the possibility of a ceiling effect for the music-focus group – perhaps they were already too happy for the intervention to make a difference.

Lying becomes automatic with practice

In the November issue of *Frontiers in Psychology*

Forget shifty eyes or fidgety fingers, psychology research has shown that these supposed signs of lying are unreliable. A more useful foundation for lie-detection is the simple fact that lying is more cognitively demanding than telling the truth. False answers usually take slightly longer than honest responses, especially when a suspect is burdened with an extra mental challenge, such as telling their story backwards.

However, a new study suggests that the cognitive demands of lying can be reduced with practice. Xiaoqing Hu and his team presented 48 participants with dates, place names and other information and asked them to indicate with one of two button presses whether the information was self-relevant or not. In real life this would be equivalent to a suspect posing as a different person. Instructed to lie, the participants took longer to respond than when they told the truth, consistent with the well-established idea that lying is cognitively demanding.

Next, a third of the participants were told about the reaction time difference and given extensive practice at lying more quickly about the self-relevance of information. The requirement to get faster was made explicit because past research found lying practice without such an instruction was ineffective. On retesting, the trained participants no longer took more time to answer dishonestly compared with telling the truth. 'Deception is malleable and... can be voluntarily controlled to be more automatic,' the authors said.

Another group had no training but were told about the reaction time difference between lying and truth telling, and encouraged to answer faster when lying. They got faster at lying compared with a control group, but still they were speedier when being honest.

The researchers claim that to be more realistic, lie-detection research based around the cognitive demands of lying should incorporate the effects of practice.

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