

February 2021: Psychoneuroimmunology - an important mouthful.

In March last year we looked at the links between positive emotions and the immune system. There is a wealth of research available on the topic. There have been a host of studies over the years into the effects of stress and social isolation on the immune system. Many of these studies focus on the level of antibodies after immunisation and the activity of the natural 'killer' cells, the T cells. I will not dwell on the science of immunology, generally speaking the immune system is viewed as having 2 arms, one of which deals with bacterial infection and tissue damage, while the other deals with viral infection. The consensus is that chronic stress has a detrimental effect on our response to viral illnesses and immunisation, such as influenza and hepatitis. Chronic stress increases levels of pro-inflammatory proteins in the bloodstream, such as interleukin-6 which target bacterial infection, and which are strongly implicated in cardiovascular and stroke mortality. At the same time it increases the production of cortisol which inhibits the immune response to infection. A brilliant [Study in monkey social organisation](#) have shown the high-ranking monkeys, whose lives are less stressful, have better antiviral defences than lower ranking monkeys (with low-ranking females completely at the bottom of the tree), and this depends on the activation of certain immune genes triggered by social cues such as grooming. This is clearly related to the risk of injury, as the lower ranking monkeys are much more likely to suffer attacks by those higher up the social ranking and will need to have activation to an 'antibacterial and tissue repair' suite of genes. General stress (and there is plenty of that in our current society) [may come from unrecognised threats](#) which probably come from past stressors rather than genetic or biochemical deficits in individuals.

All of this points to the fact that there appears to be this switch between viral protection and bacterial infection triggered by a genetic switch which is thrown by chronic stress which reduces viral protection. This was explored recently in an excellent podcast of 'Crowd Science' on the world service '[Can being happy help me fight infection?](#)' looking at the issue of the immune response to the Covid-19 immunisation which is of course a viral illness related to the common cold, although a considerably more dangerous form of it. Also well worth reading is a recent New Scientist feature aimed squarely at the issue of increasing the response to vaccination by various mental and emotional techniques '[You can boost a vaccines effect with good moods and good friends](#)', which has copious excellent references. Of particular interest is one study that showed that the [level of positive emotions on the day of vaccination will result in a significantly higher level of antibodies 16 weeks later](#). Another study showed that the 10 days after immunisation was also a critical period.

These studies are mainly looking at the effects of mood, not at the effect of changing the mood. But our research with our Canadian partner showed that listening to our 10 minute audio, available on our 'feeling good; positive mindset' app has a powerful immediate effect on [increasing positive emotions in those with low levels](#) (see 'confidence boost' - Sheila's voice was the one used in the research) and this is something many people who use the app bear witness to, such as Jake [on our website homepage](#).

There is also [a recent review looking at the evidence of a variety of stressors and interventions](#) in relation to the current pandemic. Depression and anxiety are recognised as having

negative effects on immunity. Sleep is also a major factor. Exercise is also recognised as beneficial to the immune response. Loneliness is a big factor in reducing the response. Some studies show that compared to non-caregivers, caregivers of dementia patients had a marked drop in response to antibody levels after immunisation, 38% of caregivers had a fourfold antibody response compared to 66% of non caregivers, perhaps a combination of less exercise, poor sleep, and loneliness. Stress in the immediate 10 days after immunisation has a greater effect than in the 2 days before.

A [2006 study showed](#) that positive emotions also protect you from actually picking up viruses particularly colds and flu so changing your outlook is a win-win (Covid-19, coronavirus is a 'common cold virus, albeit a pretty nasty one at present, but in a few years may just be another 'common cold).

So if you want to be in a good mood and increase your antibody response on the day of vaccination you could listen to the free self-confidence boost track, or talk to and hug (if you can) someone close to you, or why not both? I will probably also walk or cycle to my appointment, and listen to the 'self-confidence' track 5 on the feeling good for life module on the app, it helps me sleep the night before as well. Positive Mental Training also had a [6 month effect in reducing anxiety and depression](#) in stressed health professionals.