

# Good Heartedness *IS* Good for your Heart

Richard Hill



**It seems almost weird** and perhaps pretentious to suggest that there is science to show that kindness, good heartedness, positive social engagement and feeling good about yourself is an evolved factor in our capacity to heal, be well and stay well, but this is true. The era of the tough, individual, socially disengaged hero that saves the world is past. The hero/heroine of our health and well being is in the activities that occur between us and the subsequent activities that are generated within us.

**N**europsychobiological science is discovering that our fundamental functionality is dependent on being an engaged, social species. The very development of our brains, our biology, is dependent on interaction with the environment and with other people. Daniel Siegel, developer of Interpersonal Neurobiology, has said that neuroscience is proving the value and importance of kindness to our health and well-being (personal communication) and Ernest Rossi has long talked about the benefits of art, truth and beauty in the psychosocial genomic processes of daily life (Rossi, 2004).

We are joined, you and I, by a flow of action and reaction between mechanisms specifically evolved for interpersonal engagement – faces, facial expression, eye contact, gestures and vocal communication (Porges, 2011). Each brain rapidly builds mental maps of the 'other' through a cascade of conscious and non-conscious cues (Siegel, 2007). Mirror neurons form a sense of awareness of physical and movement similarities and intentions before our conscious awareness even begins to reflect (Sinigaglia & Rizzolati, 2011) on the content rich display being transferred across the 'social synapse' (Cozolino, 2006, p.5) between bodies, brains and minds.

If we only existed in our brains and minds, like Putnam's philosophically mischievous '*brain in a vat*' (1981, p. 1), then this interplay between brains and minds would be limited to mental mapping process, but we are more—activities above the neck are given numerous pathways to extend the interplay into the biology below the neck. The

experience without is the enriching opportunity that can trigger activity within that has the capacity to enable an organism to adapt, change, develop and even promote self generation (Rossi, 1993).

When the experience is positive, safe, pleasurable and socially rewarding, there is a cascade of reaction that transforms the experience into a biological conversation that is very different from the activity that is generated by stress, fear and danger. Of the numerous mechanisms that connect brain and body, the most ardent is arguably the vagus nerve. The vagus nerve is also known as the tenth (X) cranial nerve. It emerges from the lower part of the brainstem (medulla oblongata) and leaves at the base of the skull (jugular foramen), passing close to the jugular and then extends throughout the abdomen, connecting with heart, lungs,

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stomach, liver, spleen, kidneys, adrenals and intestines (Monkhouse, 2006). Efferent information (from the brain) is conveyed through the vagus nerve more extensively than any other single nerve. There is also afferent information (to the brain) conducted via the vagus nerve (Berthoud & Neuhuber, 2000). It is an important 2-way street (Thayer, 2007).

The activity between the brain and heart through the vagus creates the state of interplay called 'vagal tone'. Good vagal tone is better for health and well being and it is now



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being shown that good vagal tone is directly related to the quality of experience that is occurring across the social synapse (Fredrickson, 2013). Barbara Fredrickson shows that positive development of the vagal tone changes the rhythm of the heart by refining what is called 'heart rate variability' (HRV). Basically, this is a variation in the frequency of heart beats as you breathe in and out. It is healthier to have a higher rate of variability. Fredrickson tested the quality of vagal tone in relation to a 6 week program of warmth and kindness experiences between participants and toward the self. This resulted in raising vagal tone and positively improving HRV. This experiment showed two important things: firstly, that vagal tone is not fixed and, like brain plasticity, can alter in relation to experience throughout life; and secondly, that vagal tone can be increased through engaging and caring social experience.

The story does not end there, although that was the specific inquiry of Fredrickson's research. Investigating the literature, especially when the scope of relevance is widened, we discover that the benefits are not only cardiovascular, but also in immune system response (Weber et al., 2010; Thayer, 2009). From a simply logical view the immune system uses blood vessels (along with lymph systems and bone marrow) to move

about the body (Schwartz, et al., 1981). The better the condition of the heart, the better is the flow of the immune biochemical response around the body. Equally important to blood flow is the condition of blood vessels and the cardiovascular system. Reductions in stress and anxiety are fostered by positive social engagement which reduces levels of cortisol (Uvnas-Moberg, 1998). Lower cortisol levels have a beneficial effect on the cardiovascular system. It is the interplay of these and other systems in our biology that lead to better health. We have worked out the nature and process of these different systems through productive scientific method, but it is important to re-engage them into the interplay that is the true nature of our biology. Having said that, I want to return to the specific processes of the immune system and the vagus nerve.

The need for up or down regulation of inflammatory elements is communicated to the brain from the immune system via the vagus nerve. This is facilitated by the neurotransmitter acetylcholine which acts as a brake to inflammatory processes. Stimulation of the vagus nerve is a therapeutic process that has been found to stop or at least down regulate the production of inflammatory markers by promoting the distribution of acetylcholine throughout the abdomen. This enables the immune system to avoid the

hyperactivity that can severely compromise the organism and even cause death (Hansen, et al., 2001). Vagus stimulation is used in the treatment of resistant depression (Nemeroff, et al., 2006) and epilepsy (Ben-Menachem, 2002). There is a calming effect, a regulation of inflammation and a positive effect on HRV.

Vagus nerve stimulation is, however, an invasive treatment that requires applying electrical stimulation to the vagus nerve. We might be well to also think of less acute stimulation as a preventative measure. In our modern, complex environment of chronic stimulation of the immune system (chronic stress, obesity, sedentary excess, environmental pollution, poor diet) it might be reasonable to suggest that improving vagal tone through positive social interaction is beneficial to enhance the responsiveness of the vagus. As we have seen, the benefit of positive social interaction to vagal tone is more than just about HRV. A positive social interaction improves the function of the immune system, reduces inflammation, promotes relaxation and calm and reduces stress and anxiety.

This interplay helps us to understand how positive social engagement creates not only health and wellbeing, but also improves our self healing response and recovery from disease and toxins, whether these toxins are from the external or internal environment. The bottom line is that it is a really good idea to enjoy good company and to seek out those who bring feelings of connection, engagement and a *joie de vivre*. Understanding the biology of the interplay need not diminish our capacity to be surprised and wonder

at the outcome. This is important because supporting and encouraging a sense of wonder and a feeling of the tremendous we are able to stimulate brain plasticity and gene expression, especially in the production of brain derived neurotrophic factor (BDNF) which is the necessary building block of brain plasticity (Rossi, 2002).

It may seem unrealistic that so much emerges from the seemingly simple act of enjoying the company of others (Holt-Lunstad, et al., 2010), but that is the nature of complex self-organising systems. Simple actions can have expansive effects on a complex system. This leads us to the point where we should turn our minds to the reverse perspective and discuss the many concerns of a disengaging society, of a chronically stressed culture and so many of the other social problems that interfere with positive social engagement. This social behaviour perspective is, or at least should be, a deep concern for all those concerned for mental health and wellbeing, but for the present, let us ponder on the positive potential of vagal tone through psychosocial

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activity. We know that going for a vigorous daily walk and eating healthy food are the first prescriptions for many problems like depression. It seems there are also many reasons for us to appreciate that a good heart is a direct result of good heartedness and that good company is like a sweet medication for health and wellbeing.



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**Richard Hill**, MA, MEd has had an eclectic and fascinating journey to become an internationally recognized speaker and educator on the mind, the brain, psychosocial genomics and the human condition. Richard is a practicing psychotherapist, author and developer of the Curiosity Oriented Approach. He is also the creator and host of the online interview program, MindScience TV.

