Naturopathy Essay: The Power of the Mind in Healing.

The concept of the importance of the power of the mind in healing has a long tradition, dating back in the Western world to at least Plato and Socrates (who lived around 400 B.C.), who observed the mind-body connection and referred to its importance for sickness (Backus, 1996). Since this time, the popularity of the concept – particularly from a scientific perspective – has fluctuated, however today continues to be widely discussed and explored in depth with the emerging science of psychoneuroimmunology ("PNI"). After painting a brief history of popular belief towards the mind-body connection, this essay will describe how the immune system functions; then explore the mind-body connection from both a scientific and alternative perspective; and then discuss examples of how behavioural interventions have influenced life-threatening illnesses. In aggregate, this provides a compelling portrayal of the mind's ability to influence both healing and sickness. Healing is defined as the natural process by which the body repairs itself (Princeton University, 2006), whilst the mind is defined as: thought, will, and emotion (Backus, 1996).

Whilst Chinese and Indian medicine have long considered the mind and body as inseparable (Brown, 1989), Western science has, in varying degrees (reaching its zenith with the writings of Descartes in A.D. 1619), viewed the mind and body as separate and unrelated entities (Hall, 1989, as cited in

Vollhardt, 1991). Despite this, there were important connections made by influential forefathers of medicine such as: Hippocrates (circa 400 B.C.), who said he would rather know what sort of person has a disease than what sought of disease the person has, and Sir William Osler (A.D. 1849 – 1919), who commented that the outcome of tuberculosis was linked to the patient's mind as much as his lungs (Solomon, 1985, as cited in Vollhardt, 1991). However it has only been within the past three to four decades that medical biologists and neuroscientists have begun to explore the link between the mind and the immune system (Vollhardt, 1991). In 1975 Robert Ader coined the term 'psychoneuroimmunology', based on key studies he and several other pioneers conducted in the 1970s (Azar, 1999). As defined by Ader (1999), as cited in Azar (1999), PNI is the study of the connection between the brain and the immune system; the theoretical consequence of which psychological experiences, such as stress and anxiety, can influence immune function, which in turn may have an effect on disease course.

In order to explore the scientific basis underlying PNI, it is important to understand how the immune system functions. One of the marvels of nature is that all living organisms are designed to constantly protect and heal themselves (Rees, 2003). In addition to the body's natural immunity (the skin, mucous membranes, and white blood cells which circulate in the bloodstream), there occurs also 'adaptive' immunity, which is based on the lymphocyte, a type of white blood cell produced in the bone marrow of vertebrates (Rees, 2003). There are two main types of lymphocytes: B cells (secrete antibodies and retain sensitised 'memory' cells to protect against re-infection) or T cells (monitor the circulatory system and are highly specialised). Comprised of these components, the immune system effectively acts as a constant surveillance system that continuously destroys disease-causing foreign microorganisms (Vollhardt, 1991).

PNI involves the study of the interaction between the immune, nervous, and endocrine systems (Smith, 1998); or the influence of the brain (controlled by the mind) on the body's healing processes. Experimental data shows that the three systems are interdependent: the cells of the immune system alert the hypothalamus, the control centre in the brain, to the presence of antigens in the blood; and the hypothalamus responds by increasing the flow of blood to the area and triggering the release of hormones from the endocrine glands (Rees, 2003). Further data which strongly suggests interaction between the systems is in anatomic and chemical evidence of innervation of lymphoid tissue by the CNS, indicating direct neural access to organs of the immune system (Ader, Cohen, & Felten, 1995; Backus, 1996). Finally, data also shows the neuroendocrine and immune systems' ability to produce identical substances (peptide hormones, or "neuropeptides"), whilst sharing the same array of neuropeptide receptors with which these substances can interact and transmit their messages throughout the body (Backus, 1996; Cousins, 1990, as cited in Smith, 1998; Hall, 1989, as cited in Vollhardt, 1991). In other words, neuropeptides (and a family of other powerful informational

biochemicals such as neurotransmitters, hormones and growth factors) appear to be the chemical mechanism which suggests a biological connection between the body and mind, and indeed the immune system (Moyer, 1993).

The suggested scientific link between neuropeptides – which are now known to influence every major section of the immune system – and emotions is fascinating. Neuroscientist Candice Pert, who discovered neuropeptides, describes them as the "biochemicals of emotion" (Moyer, 1993). That is, substances which carry emotions back and forth between the mind and body, and which link perception in the brain to the body via organs, hormones and cellular activity (MacKenzie, 2008). Empirical evidence exists which supports the theory that the expression of emotions affects the immune system (Booth, 2005). In particular, different emotional expressions have been found to produce short term changes in immune parameters. For example, in one study subjects who viewed humorous videos produced increased salivary Immunoglobulin-A (antibody) concentrations regardless of whether or not overt laughter was expressed, whereas overt crying was associated with decreased salivary Immunoglobulin-A (Labott, Ahleman, Wolever, & Martin, 1990; Martin, Guthrie, & Pitts, 1993, as cited in Booth, 2005). Deliberate expression of particular emotional states by method actors has also been found to induce more immune fluctuations than a neutral state (Futterman, Kemeny, Shapiro, Polonsky, & Fahey, 1992, as cited in Booth, 2005). In this way, it is possible that fluctuations in emotional status can alter immune function.

Continuing the discussion from a scientific perspective, stress and poor coping skills (corresponding functions of the mind) have also been shown to alter immune functioning. Stress is interpreted as not something that simply happens, but arises from the way an individual interprets/responds to an event (Rees, 2003). The stress response is triggered by the autonomic nervous system (Backus, 1996), which elevates the concentration of hormones such as glucocorticoids and catecholamines in blood plasma, which in turn modulates immune cells (Rabin, 2005). As lymphocytes have receptors for these hormones, the binding of the hormones to their receptors has the potential to alter immune function (Rabin, 2005). For example, the balance or function of T and/or B cells may be decreased by altering the cell-mediated immune response (Rabin, 1999; Rees, 2003), which can lead to susceptibility to viral infections and an altered ability to produce antibodies (Rabin, 1999, 2005). Interestingly, the duration of a stressor impacts on how the immune function is altered: chronic stress has been found to severely elevate plasma catecholamine (stress hormone) levels, and decrease the number of lymphocytes in the blood (Maisel et al., 1990, as cited in Rabin, 1999; Kaye & Lightman, 2005), while acute stress may actually increase lymphocytes in blood (Herbert & Cohen, 1993, as cited in Rabin, 1999). It has therefore been suggested that perhaps a little stress can enhance immunity and larger amounts of stress suppress immunity (Rabin, 1999; Kaye et al., 2005). In either case, there is much empirical evidence to indicate that stress indeed

alters immune functioning.

In contrast to Western science, there are many alternative doctrines or philosophies of healing which are not concerned with the working of the immune system or the role of the hypothalamus, but focus on using the mind and learning how to influence the energy fields that animate and surround the individual (Rees, 2003). Traditional Chinese Medicine (TCM), which has been practiced for over two thousand years, is an example of this philosophy. The EBSCO CAM Review Board (2008) describes TCM as one of the most complex, highly developed traditional healing theories in the world, predominantly comprising the practices of: acupuncture (a demonstrated anaesthesia), herbal medicine, diet, exercise systems such as Tai Chi and Qi Gong, and the architectural theory of Feng Shui. The TCM philosophy towards well-being is focused on balance (of "Yin and Yang"), and the belief that the way an individual lives their life – their thoughts and emotions, will shape a person's health (Moyer, 1993). The successful practice of TCM for such an enduring period provides an intriguing example of an alternative system which incorporates an integral connection between the mind and body.

Two practices used in the East for centuries, and more recently in the West, which uses the mind to heal and induce relaxation are meditation and visualisation. Physiologically, meditation has been shown to slow down breathing and the heart rate, decrease oxygen consumption and carbon dioxide elimination, increase the skin's electrical resistance and the intensity of slow alpha waves, and create marked changes in hormone levels in the blood (Kaptchuk & Croucher, 1986). In addition, empirical evidence has found regular yoga and meditation to increase blood levels of three important immune-system hormones by 100 percent (Seigel, 1990, as cited in Smith, 1998). Visualisation is used in TCM and many other Eastern philosophies for healing. In TCM, visualisation invites the body to imagine the healing where it is required and to send the appropriate chemicals and energy to accomplish the task (Sha, 2002). One rationale offered for this visual technique which also provides an interpretation of the mind-body connection is cited by Sha (2002, p.110):

"The body is an intelligent pharmacy, capable of manufacturing everything from carcinogens like Cortisol to cancer-curing agents such as Interluken II, which is being created in laboratories to treat cancer. When we are upset, frightened, or in pain, our sympathetic nervous system creates chemicals that harm us. When we are comfortable and relaxed, our parasympathetic nervous system creates chemicals that help us heal... clients [that have used the visualisation technique] find that it stimulates something within them that can accelerate that shift towards healing."

Of note, in Western medicine, there also exists ample scientific evidence that directed, highly specific imagery can bring about changes in the body (Smith, 1998). For instance, Smith (1998) cites that Dr. Howard Hall of Pennsylvania State University showed that subjects, using hypnosis, were able to generate a more active immune response when they imagined their white blood cells

as "strong and powerful sharks".

Another unconventional or unexplained medical phenomenon which directly associates the mind with healing is what is termed the placebo effect. A placebo is a chemically ineffective treatment, such as a sugar pill, given to patients who believe the treatment works and whereby the patient's belief itself becomes the healing agent (Smith, 1998). To the extent that researchers must take great pains to work around the placebo effect, it is probably one of the best-documented ways in which thoughts are known to affect health (Smith, 1998). Estimates vary, but around one third of people taking placebos for complaints (including pain, headache and seasickness) will experience relief from symptoms (State Government of Victoria, 2008). There have also been trials which have shown placebos to be effective in treating angina pectoris, warts, asthma, pain relief, and arthritis (Smith, 1998). Various theories attempt to explain this phenomenon but the underlying mechanisms remain mysterious (Smith, 1998). It does however offer a compelling argument that there is a clinically relevant link between the mind and body (Hall, 2001).

In support of the mind-body connection, there are several behavioural interventions (supported by scientific studies) used to treat illnesses such as cancer, HIV and cardiovascular disease, which aim to slow disease progression and arguably strengthen the immune function. Of particular significance is social support building. Social support has been shown to moderate the effects of stress on health, neuroendocrine parameters, and immune system functioning (Antoni, 2005). A study by Theorell et al. (1995), as cited in Pereira & Penedo (2005) found that men with low availability of social support had significantly more rapid decline in helper T cell counts over a five year period among HIV+ men with haemophilia. Similarly, lower satisfaction with social support has also emerged as a significant predictor of accelerated progression to AIDS among HIV+ gay men, and a larger social support network size has been found to predict a longer survival time in HIV+ men (Patterson, Shaw, & Semple et al., 1996, as cited in Pereira et al., 2005). Dossey (1993), as cited in Smith (1998), also cites a survey that showed men who had heart disease who experienced their wives as loving and supporting had 50 percent fewer episodes of angina pectoris than men who did not. In addition, involvement in psychosocial support groups has been found to significantly increase the life expectancy of cancer patients (Speigel, Bloom, Kraemer, & Gottheil 1989, as cited in Hall, 2001; Walker, Green, Greenman, Walker, & Sharp, 2005).

Similarly, retaining hope is regarded as an important behavioural intervention in healing. Negative expectations, reflecting a loss of hope and pessimism, are correlated with a worse prognosis for HIV+ individuals (Kemeny 1996, as cited in Hall, 2001), whereas a fighting spirit along with increased internal locus of control has been correlated with increases in immune system measures and improved prognosis in cancer patients practicing guided

imagery (Gruber et al., 1993; Hall & O'Grady 1991, as cited in Hall, 2001). It may be possible that individuals with medically defined diseases would live longer if they believed that they had a chance to live a long life rather than a short life in poor health (Mossey & Shapiro, 1982, as cited in Rabin, 1999). A potential biological explanation for this is the belief in self-rated good health may affect the hormonal milieu of plasma in a beneficial way, whilst if a person does not believe they will be healthy, they may promote a hormonal milieu and behaviours that do not promote optimal physiologic function (Idler & Kasl, 1991, as cited in Rabin, 1999).

In conclusion, whilst many Eastern cultures and doctrines have incorporated the healing power of the mind into their practices (such as meditation and visualisation) and belief systems (for example TCM) for centuries, Western science has only recently begun to explore the relationship in the study of PNI. While mysterious phenomenon such as hypnosis and the placebo effect add an unexplained and perhaps contentious element to the subject, it is clear that a vast array of empirical studies to date support the idea that the mind indeed has an ability to influence susceptibility to disease and has in many instances influenced the body's healing abilities. The observed outcomes of behavioural interventions on terminal illnesses support this. The complexity of the relationship between the mind and body, and the extent of external and internal influencing factors, however, is enormous. In viewing, as Smith (1998) so eloquently describes, the immune system as being a mirror to life, responding to its joy and anguish, its exuberance and boredom, its laughter and tears, its excitement and depression, and its problems and prospects; it is easy to contemplate why scarcely anything that enters the mind would not find its way into the workings of the body.

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