

## Understanding Chronic Pain by Hendrik Visser, M.D.

Scientists have been baffled for years why two individuals, with very similar injuries, can have very different outcomes. Where one person recovers completely, the other may develop chronic pain, even though their injuries were similar. This paper examines recent findings by medical scientists, which explain how the brain processes physical pain information, and why some people are more prone to develop chronic pain. By understanding how we perceive pain, we will be able to develop strategies to help treat and alleviate chronic pain.

### Pain and injury—a variable link

Most people assume that the amount of pain they experience is in direct proportion to the amount of injury to the tissues in their body. A small injury results in a small amount of pain, while a large injury results in a great deal of pain. While this is often true, there are many instances where this simple relationship fails to hold up. There are times when a very small injury results in severe and long-lasting pain, and there are times when a large injury results in little or even no pain. An example of this is the man in Figure 1.



**Figure 1**

Seminar participants are usually divided 50:50 in their opinion as to whether the man feels pain. He is taking part in a Hindu rite in which he drags a heavy weight up a steep procession. He does so by hooks and skewers that are stuck into his skin, and attached through the ropes to the load behind him. Surprising to most western minds is that he does not feel pain:

“In preparation for the procession the penitents endure a month-long regime of fasting and abstinence to make themselves ready physically and

spiritually for the rite... mutilating their bodies with hooks, skewers and even spears, which apparently cause little or no pain.”

This example clearly illustrates that the relationship between injury and pain is highly variable—significant injury to the skin and flesh on this man’s back is causing him no pain. Let me illustrate this further with a couple of other examples from other cultures. These are from a book entitled *The Gift of Pain* by Dr. Paul Brand, a renowned hand surgeon who spent many years working among the lepers in India.

Dr. Brand grew up in India. He shares about trips to town as a child and encountering the *fakirs* who exploit their ability to defy pain as entertainment.

During a festival local villages often received a visit from one of the very impressive *fakirs*, who seemed to defy all rules of pain. I saw one man push a thin stiletto-type blade through his cheek, tongue, and out the other cheek, then slowly withdraw the blade with no sign of bleeding. Another stuck a knife sideways through the neck of his child, and I broke out in goose bumps as the tip came out the other side. The child held very still and did not flinch.<sup>1</sup>

Coal walking, Dr. Paul Brand says, is another trick for a good *fakir*. While local people credit *fakirs*’ powers to their Hindu gods, many believe their mastery over pain can be learned through altered states of consciousness.

Dr. Brand goes on to explain how people in various cultures perceive pain differently. Whether consciously or subconsciously, the mind largely determines how we perceive pain, he says.

Societies in Micronesia and the Amazon valley practice a childbirth custom called *couvades* (from the French word for “hatching”). The mother gives no indication of suffering during delivery. She may break from work a mere two or three hours to give birth, then return to the fields. By all appearances it is the husband who bears the pain during the delivery, and for days afterward he lies in bed, thrashing about and

groaning. Indeed, if his travail seems unconvincing, other villagers will question his paternity. Traditionally, the new mother waits on her husband and sits by his side to entertain the relatives who drop by to offer him congratulations.<sup>11</sup>

What these examples all illustrate is that the perception of pain is not inevitable when there are pain signals originating somewhere in our body. Under certain conditions, pain signals can be stopped from reaching brain consciousness. Other times, pain signals are perceived by the brain that do not originate in the body, but feel like they originate somewhere in the body. The link between injury and pain is therefore highly variable: injury may occur without pain, and pain without injury. This puzzled scientists for years, until two researchers, Dr. Ronald Melzack from Montreal and Dr. Patrick Wall from London, England, first offered the scientific theory to explain this dilemma. The *gate-control theory of pain* they described is still the accepted theory among pain specialists around the world.

### Gate control theory of pain

Dr. Melzack and Wall recognized that there are three stages to pain perception:

1. *Pain signal* – A nerve ending (*nociceptor*) designed to sense pain, is stimulated, generating a signal in the nerve.
2. *Pain message* – The nerve carries the pain signal to the spinal cord, and then up to the brain.
3. *Response* – The brain (*cerebral cortex*) interprets the signal and perceives pain. The perceived pain will then trigger a response, such as pulling your hand out of the fire.

Figure 2 illustrates these stages.

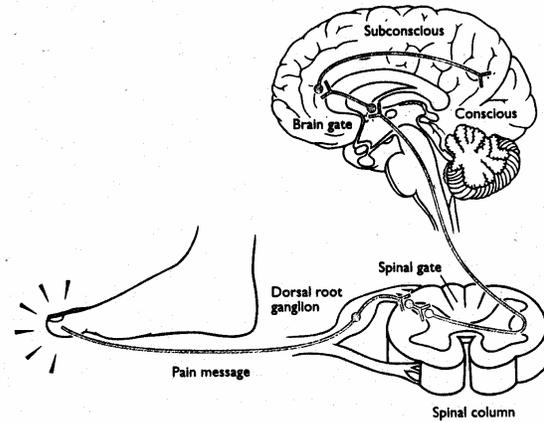


Figure 2

If you drop a rock on your toe, a pain signal is generated. The signal then travels along the nerve as a message to the spinal cord, where it goes through a *spinal gate*, and then up a second nerve fibre in the spinal cord. In the brain the message hits the *brain gate*, and then proceeds up to the subconscious and conscious parts of the brain. It is the *gates* that determine how many messages actually get through to our consciousness. They can be likened to a dairy farmer's gate which he opens to let the cows in for milking. If he opens it a crack, one cow gets through at a time; if he opens it wide, maybe four or fives cows can get through together.

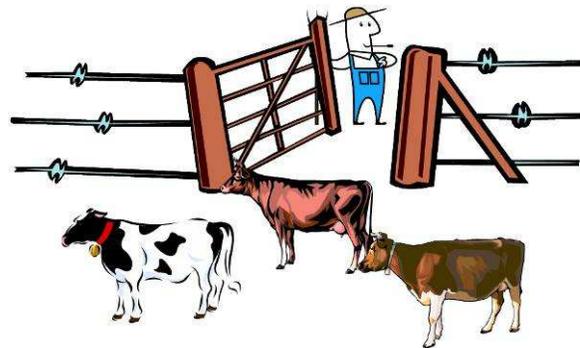


Figure 3

Figure 3 illustrates the dairy farmer controlling the opening in the gate. The cows represent pain messages waiting to get through to the brain. A wide-open gate allows more cows (pain messages) to get through; a narrow gate allows few cows (pain messages) through.

Similarly, how much pain gets through the *pain control gates* in our spinal cord and brain is determined by how wide they are open. Their opening and closing is under the control of the nervous system and was the object of Dr. Melzack

and Dr. Wall's intense research. They demonstrated that *descending* nerve fibres, originating in the brain and traveling down the spinal cord, influence the spinal gates. These descending nerve fibres influence the dairy farmer's hold on the gate. Think of them whispering in the farmer's ear, "Open the gate further." Other times they whisper, "Close the gate."

The descending nerves open or close the gates in part by releasing *enkephalins*, a type of *endorphin*. Endorphins are the body's own morphine-like painkillers that act like gatekeepers by limiting the amount of pain messages getting through. As well as being released by the descending nerves, recent discoveries also demonstrated that they are released by the pituitary gland. Think of these endorphins as the farmer in our illustration. It is the release of endorphins (along with several other *neurotransmitters* which are small chemical hormones that help nerves communicate with each other) that interests us as we develop strategies to help people with chronic pain.

#### Competing messages

The second part of the gate control theory of pain, which explains the variable relationship between injury and pain, is how the gates deal with *competing messages*. Competing messages are non-painful stimuli reaching the gates from other nerves, particularly non-painful touch. To use our cattle gate illustration, it is like a flock of sheep sharing the same pasture competing for the same opening in the gate (Figure 4). If the sheep are at the gate and rush through, the cows will have to wait their turn.

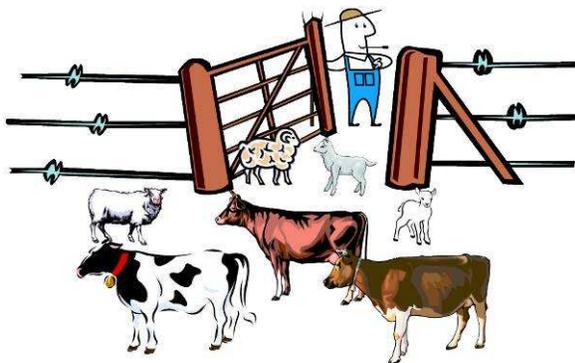


Figure 4

What do we naturally do when we injure ourselves? Typically if we cut ourselves, or hit our thumb with a hammer, we grab the injured limb with our other hand and rub or squeeze. This sends non-painful messages to our spinal gates, which then compete with the painful messages from the injury. This is sometimes called a *counter irritant*, and it is

the basis on which such therapies as TENS (Transcutaneous Electrical Nerve Stimulation) work. And of course, that's why a mother's hug and kiss are so crucial to alleviating the pain of a child's scraped knee, and thoughtful medical professionals know how to distract a patient whom they are about to give an injection.

#### Gating errors

The gate control theory of pain has helped medical scientists understand the wide variation in pain responses between people and the various factors that intensify or weaken pain. The response phase in the brain is influenced by many factors including genetics, emotions, culture, and previous experiences. The current theory of chronic pain conditions, such as Fibromyalgia Syndrome (FMS), is that they are caused by an error in "gating." The control gates are not stopping, or filtering, unnecessary incoming sensory input from various body parts; they are locked in the open position, leading to exaggerated symptoms that are not a sign of bodily damage or abnormality. In fact, the nerves that normally transmit messages up the spinal cord become irritable and start to fire spontaneously, further intensifying the perceived pain in the brain, a condition called *neuropathic* pain.

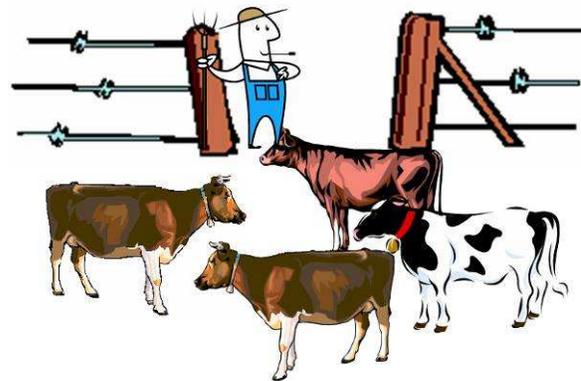


Figure 5

Figure 5 illustrates this scenario. The gate is off the hinge, and the farmer no longer has any control of the cows coming through. If they decide to stampede, he is powerless to stop them. Similarly, in those individuals who are susceptible, the brain loses control of sensory input due to dysfunction in the "gating" system. Touch can be painful, odours can cause illness, and climbing a flight of stairs is like climbing a mountain.

One of the key functions of the brain that is learned early in life is to sift through the continuous flow of sensory input that is being sent to the

processing centres of the brain from all our sensory organs—sights, sounds, smells, tastes, and touch. In a healthy brain, non-essential sensory input is ignored. More important information is heeded and processed, and appropriate output is generated, usually as some type of response.

Let me show the importance of this capacity to filter sensory input. An example is the ability of people to filter out unnecessary noise. People who live on a busy highway learn to sift out road noise—they just don't hear it. They sleep soundly all night. Overnight visitors from the country, on the other hand, can't get to sleep because of the traffic all night long. People with chronic conditions such as Fibromyalgia Syndrome are like the overnight guests who have learned to lay awake at night listening to the traffic, worrying whether a stray vehicle may hit the house.

Why then do some people develop these "gating" abnormalities that lead to chronic pain? Maybe if we know the cause, we will be able to devise treatment methods that will help us close them. We will turn our attention there next.

### Known pain intensifiers

We have seen how the variable relationship between pain and injury is explained by the opening and closing of our pain control gates. These gates are under the control of our nervous system through descending nerves, particularly from the part of our brain that controls our emotions. So we need to look next at the *emotional factors* that influence the opening and closing of our gates.

Pain research has revealed at least six emotional pairs that are known pain intensifiers—fear/worry, anger/bitterness, guilt/regret, loneliness/rejection, helplessness/hopelessness, and shame/inadequacy. These are outlined in Table 1.

Table 1

Emotion	Description
<b>Fear/ Worry</b>	A feeling that danger, or evil, is near; anxious thoughts about bad things that may happen to us, or those we love; thinking the worst or catastrophizing.
<b>Anger/ Bitterness</b>	A feeling toward something or someone that trespasses, hurts, opposes, offends, or annoys you; strong displeasure; indignation; revenge; lack of forgiveness.

<b>Guilt/ Regret</b>	The fact or state of having done wrong, or being to blame; having broken God's moral laws.
<b>Loneliness/ Rejection</b>	A lack of quality relationships with other people; the feeling of being alone without others caring, unloved; strained relationships with those you care about.
<b>Helplessness/ Hopelessness</b>	A feeling of not being able to help oneself, or that others can help; a feeling of weakness and powerlessness, unable to change a bad situation.
<b>Shame/ Valueless</b>	A feeling of being hopelessly flawed or inadequate; a feeling of worthlessness; a feeling that I AM wrong; absence of self-esteem.

Researchers discovered these six pain intensifying emotions by doing experiments on volunteers with skin callipers (pinchers) and metal rods that rapidly changed temperature. Subjects would hold the metal rod, for example, while the researcher changed the temperature and the volunteer would be instructed to indicate when he could no longer stand the pain (heat or cold). While there was of course significant variation in pain tolerance between volunteers, the addition of such emotions as fear or anger significantly changed the tolerance for a given subject.

Compare these negative emotions with their pleasure inducing opposite pairs: trust/security, peace/kindness, innocence/gratitude, love/acceptance, hope/passion, and worthiness/esteem. It is the relative weighting of one's emotional state that not only affects one's mood, but also one's ability to deal with chronic pain. Figure 6 illustrates this balance.

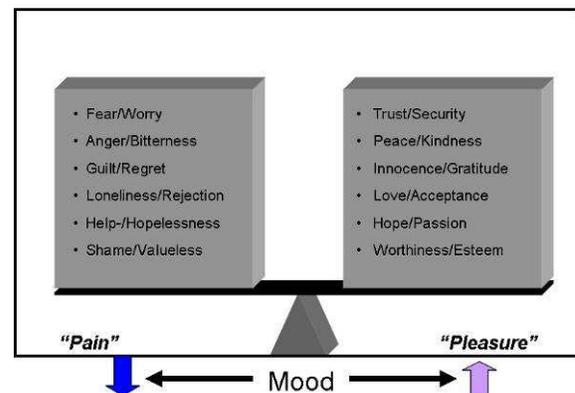
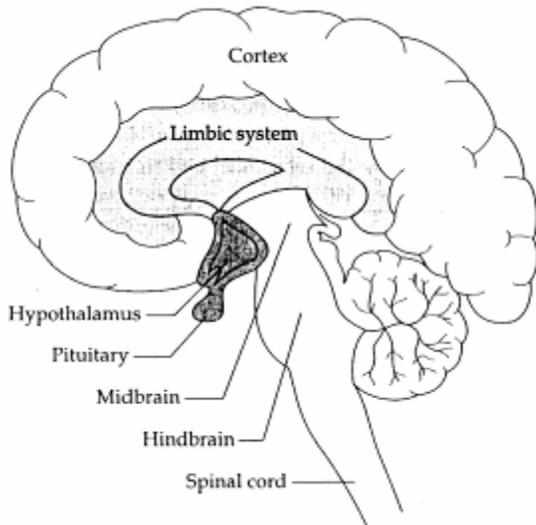


Figure 6

On the left side of the balance are the pain intensifying and energy draining pairs. The balance will tip to the left, when any one pair, or several pairs together, predominate a person's emotions over prolonged periods of time. These negative emotional pairs are additive; the heavier together, the further the resulting shift to the left. This results in a depressed, irritable or unresourceful mood. On the right side of the balance are the pleasurable emotions, which can offset the negative ones. Their predominance tips the balance to the right resulting in a more positive, resourceful mood or state.

To further understand how our emotional state affects our health, we will need to take a few moments to examine some *neuroanatomy* (the anatomy of our brain) and how our nervous system is actually wired. Figure 7 is a simplified picture of the human brain.

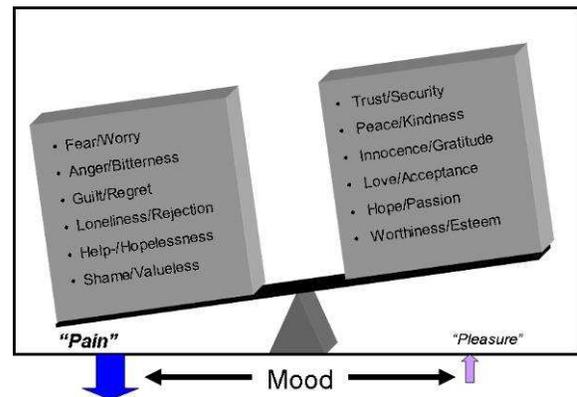


**Figure 7**

The seat of our emotions is primarily located in the middle part of the human brain known as the *limbic system*. Think of it as the CPU (main processor) of a computer. Just like a CPU gets its information from the motherboard, the limbic system primarily gets its incoming information from the *cortex* above. And as a CPU sends its output to the screen or printer, so the limbic system's output is primarily directed downward, to the *hypothalamus* and *brainstem* (midbrain and hindbrain), which in turn control most of our bodily functions (*physiology*). The hypothalamus regulates the *pituitary gland*, which acts as the regulator for our hormone systems, including the release of *beta-endorphin* (a pain killer). The brain stem is the control centre for our *autonomic nervous system*,

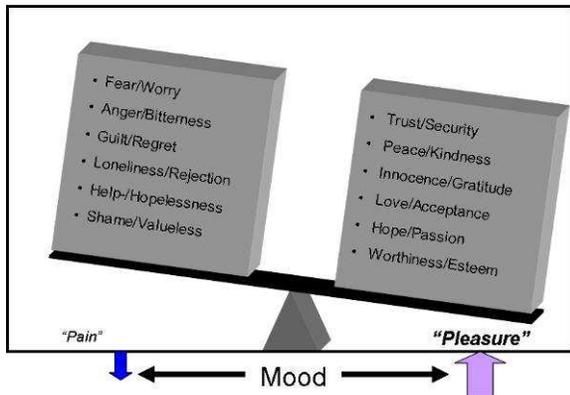
which prepares our bodies for the so-called fight-or-flight reaction, or for relaxation. And the limbic system also controls the descending nerve fibres that travel down the spinal cord to the pain control gates, causing a release of *enkephalins*, which as you may recall act like gatekeepers, reducing pain.

In *acute* pain conditions, or when there is sudden acute stress, the limbic system sends instructions to close the pain gates, thereby allowing a person to escape harm. This is called *stress-induced analgesia*. This allows the wounded soldier to get out of the battlefield, and the competitive athlete to finish a game with a broken ankle. But when stress has become chronic, when fear, anger, guilt, loneliness, helplessness, and shame predominate for extended periods of time, the limbic system loses its ability to close the pain control gates. This appears to happen because the nerve cells that release endorphins become depleted from chronic stress. This also sets the nerve cells up to start firing spontaneously, causing pain long after the injured tissue has healed. So when the emotional balance moves to the left, we will experience depression, increase in pain, and the development of chronic pain syndromes (Figure 8).



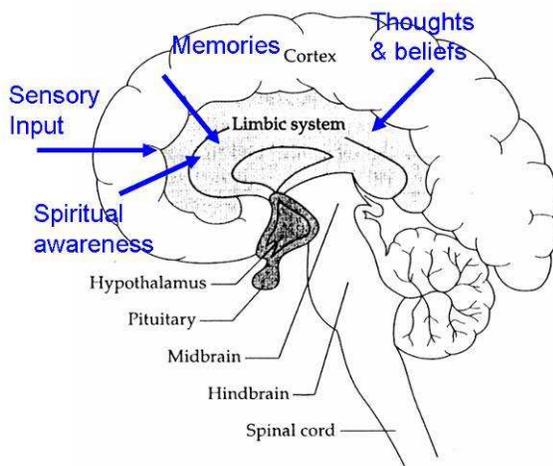
**Figure 8**

On the other hand, where trust, peace, innocence, love, hope and worthiness predominate, the balance shifts to the right resulting in an appropriate endorphin response which minimizes pain and maximizes pleasure (Figure 9).



**Figure 9**

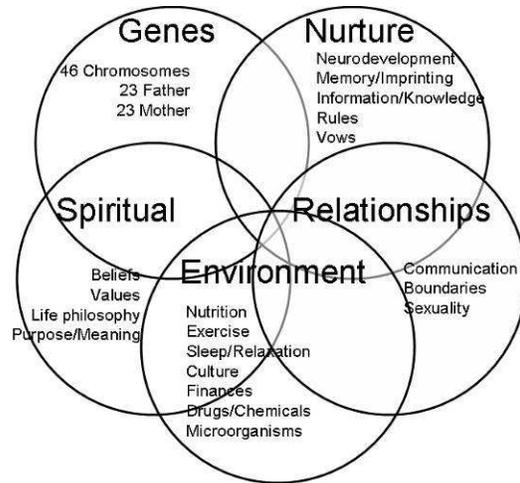
The next question we need to ask is what influences our emotional state? We have already seen that the limbic system gets its primary *input* from the cerebral cortex above (Figure 10, below). The cortex in turn gets its information from a combination of sensory input from the body, sensory input from the outside environment, and stored information (memory and beliefs). This combination generates our *cognitions*, or thoughts.



**Figure 10**

We have already seen how the cerebral cortex is like the motherboard of a computer that takes input from various sources, compares it to stored information, and then sends the information to the limbic system and on to other parts of the brain and body. The best way to illustrate the interplay of what our cortex uses to produce its unique output is through a series of five overlapping circles (Figure 11). These circles represent five interrelated areas of universal human experience that contribute to our personality, our perceptions, our thoughts, and our

actions. Think of them as our particular *baggage*—those things we are born with and pick up through our journey of life. We will use a bread and stone metaphor here, comparing them to the accounting concepts of *assets* and *liabilities*. Some of the things in our suitcase will assist us in life (assets or bread), while others weigh us down as burdens (liabilities or stones). A suitcase full of rocks will weigh us down leading to pain, while sustaining bread will assist us in reaching our destination.



**Figure 11**

The five overlapping circles that make up our baggage in Figure 11 represent five areas of human experience as follows:

1. *Genes* – the genes or chromosomes we inherit from our parents
2. *Nurture* – our past, particularly our early childhood experiences from conception to age 6
3. *Relationships* – our present relationships with other people
4. *Environment* – everything we put into our body, put our body into, or do with our body
5. *Spiritual* – that part of humans that has to do with meaning and purpose in life, and our religious beliefs

The interrelatedness of these areas is shown by the overlap of the circles. So for example, there is overlap in our relationship with our parents who are still living, since they were part of our nurture, and are still part of our present relationships. Similarly, scientists aren't certain where the influence of our genes ends, and our nurture begins (the old nature versus nurture debate).

Let's look at each area in turn.

## Genetics

We all receive our unique genes on the day of our conception, 23 chromosomes from each parent. While scientists dangle the carrot of genetic engineering in front of us, by and large, what you have is what you've got. We can't change or fix our genes. Who we are today is probably about 40 to 50% determined by our genes. Now we may have inherited positive genes (assets) such as longevity (long life) and health. Or we may have inherited genes that make us prone to certain conditions (liabilities) such as chronic pain, bipolar illness, depression, addictions, heart disease, allergies, etc. One parent may have left you positive genes, while the other gave you negative genes.

When discussing genetics in the realm of *dis-ease*, one should realize that genes are rarely about *inevitability*, but instead about *vulnerability*. Almost always, some other environmental trigger is needed to turn that vulnerability into disease. This is almost certainly the case with depression, Fibromyalgia Syndrome, and Chronic Fatigue Syndrome. An environmental trigger such as a car accident or a viral illness may trigger chronic pain in those with a genetic predisposition.

## Nurture

The nurture circle represents our history from the day of our conception, particularly our first six years of life. Scientists now know that the environment, which a child is exposed to both before and after birth, interacts with our genes to determine who we are today. Studies of identical twins show that about 50% of who we are is in our genes; the other 50% then is due to nurture. The nature versus nurture debate pendulum has swung back and forth and recently there has been renewed interest in the nurture side. In 1999, the Ontario government released a report called the *Early Years Report*, which documented the evidence from the neurosciences that "nurturing ... in the early years has a decisive and long-lasting impact on how people develop, their capacity to learn, their behaviour and ability to regulate their emotions, and their risks for disease in later life."<sup>iii</sup>

The reason for this is that experience matters—it changes the brain. Scientists recognize that sensory input, such as touch, sights, and sound, results in certain activity in brain cells that deal with translating this information; the more the sensory input (repetition or particularly intense input), the more this neural activity. And the more these nerve cells are stimulated, the more they develop in response and the more these nerves reach out to

develop *synapses*, or connections, with neighbouring nerves. If a system is under-stimulated, such as might happen with neglect, then there is underdevelopment and non-connectedness of these brain cells.

Let me illustrate with a well-documented example. The nerves between the eye and the brain are not fully developed at birth. In order for these nerves to develop, the baby must be able to use his eyes to stimulate proper nerve growth. If the baby is born with a congenital cataract, and if it is not surgically removed within the first 5 years of life, that child will never develop normal vision in that eye.

Of particular importance in very early life is stimulation through loving touch. This causes nerve cells that lead to bonding and trust to develop properly. If a baby is neglected, this area of the brain may never develop correctly, often resulting in relational mistrust later in life. These are called *attachment disorders*.

Childhood brain development is also affected by *cognitive* information fed into your memory through childhood experiences, schooling, television, and peer influence. This becomes the basis for our knowledge, which shapes what we believe about other people, our environment, and ourselves. This information may be an accurate view of reality, or it may be distorted due to childhood perceptions as the result of neglect or trauma. In either case, it becomes the foundation for some of the unconscious *rules* we learn to live by as adults, as well as the *vows* or promises we make to ourselves.

As in the case of our genes, our early childhood experiences may have left us with assets (loving nurturing parents, a happy home, positive school experiences), or with liabilities (neglect, alcoholism, divorce, abuse, school bullies). A positive childhood leads to healthy brain development and an accurate knowledge base. A neglectful, or abusive childhood, leads to arrested brain development and a distorted view of reality. Such negative experiences may have influenced us significantly in our emotions of fear, anger, guilt, and shame: fear of rejection or abandonment; anger and unforgiveness in regards to abuse or neglect received; guilt about choices made, often secondarily to painful experiences; shame, the feeling of being inadequate or being to blame for the problems in early childhood.

As you think about your past, please recognize that we are not rooting around in the past for the sake of stirring up pain or opening old wounds. Rather, it is to help find the roots of your lingering pain today. If you don't have pain, there is no need to visit your past. But you also need to recognize that through inner healing, you can be set free from the liabilities of your past.

## *Relationships*

Humans are relational beings and healthy relationships are essential for emotional and physical health. A strong connectedness in a good marriage or close relationships with family and friends are assets that support and promote well-being. On the other hand, strained relationships and loneliness are both known to be major stressors, and therefore likely contribute to pain. The proverbial, “He’s a pain in the neck,” while meant to be a figure of speech, may actually be literally true. Such relationships are likely to be marked with damaging communication and the blurred boundaries of codependency. Frequently there is a string of failed relationships and unfulfilling, or misdirected, sexuality.

Take a moment to examine your relationships for assets and liabilities. Who are the “significant others” in your life? Do you give and receive positive communication such as “I love you,” or “Can I help you?” Or do you blame, criticize, complain, nag, or threaten? Do you feel free to be your own person, or are you controlled? Are you a controller? Do you have unhealthy thoughts or ties to former lovers? Are you experiencing fulfillment in your sexuality?

## *Environment*

The environment circle represents everything we put into our body, expose our body to, or do with it—the air we breathe, the food we eat, the exercise we do or don’t do, the quality of our sleep, the drugs we take, supplements, the pesticide we are exposed to, our work environment such as repetitive movement, bacteria and viruses that can infect us, injuries, financial security, etc. Here you need to examine your lifestyle carefully and honestly. The following may be significant hindrances to your health:

- Poor air quality at work or in the home
- Overeating and overweight
- Alcohol dependence
- Narcotic dependence
- Smoking
- Multiple mood-altering drugs
- Lack of exercise
- Lack of light
- High stress job
- Low socio-economic status (poverty) or financial debt

On the other hand, a well-balanced lifestyle with good nutrition, maintaining an ideal body weight, regular exercise, avoidance of addictive

chemicals and behaviours, and a measure of financial security promotes health and vitality.

## *Spiritual*

Humans are spiritual beings and a whole-person approach would be incomplete without an examination of how our religious beliefs and spirituality impacts our health and wellness. One’s belief system, and one’s values, can either be helpful or detrimental to our health. If you believe in God, your view of God may be as an angry, unloving God who punishes you, or who has let you down. Your anger toward God may tip your emotional state to the left, intensifying your pain. Or your view of God may be that of a loving, benevolent God who is on your side. Here your faith is an asset that will help move your emotional balance to the right, promoting health. On the other hand, you may be an atheist and have deep questions about the meaning of life. Similarly, if you have a clear sense of purpose and calling in life, you will be in a more positive mental state, than if you really have no concept of why you are here. Past spiritual experiences, such as involvement in the occult, may also be burdens in your spiritual baggage that influence you in negative ways today.

## **Mind body connection**

We will now examine how output from the emotional state of our limbic system influences our physical health and our behaviour. Figure 12 illustrates limbic system output.

The first effect of the limbic system is on our *psychoneuroendocrine* (PNE) pathway, our hormone systems. Output from the limbic system is directed toward the *hypothalamus*, which in turn directs its output to the *pituitary gland*. The pituitary is the master controller of our hormone system including the thyroid gland, the adrenal glands that produce cortisone, growth hormone production, and the ovaries or testicles that produce our sex hormones. Secondly, descending nerves travel down the spinal cord to open and close the spinal pain control gates. Thirdly, the limbic system influences our *psychoneuroimmunology* (PNI) pathway. This controls our immune system, which protects us from bacteria, viruses, and cancer. And lastly, output from the emotional state of our limbic system is directed toward our conscious mind in the cortex, sometimes referred to as our *executive centre*, located in the prefrontal cortex (just behind our eyes). Here is where our “self-talk” happens (the conversations we have with ourselves), and where we make choices that direct our behaviour.

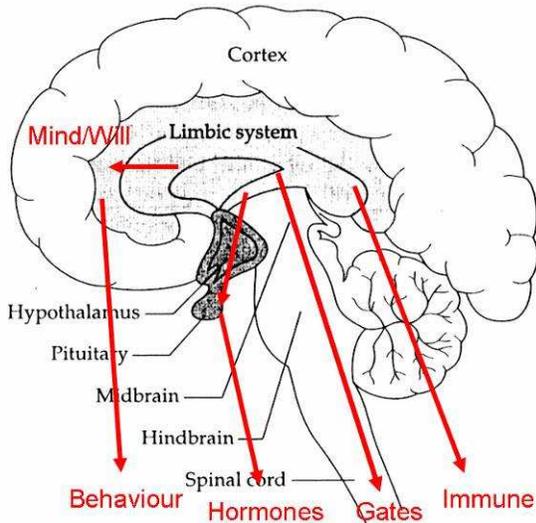


Figure 12

We now have all the pieces to illustrate a model of how all this works together (Figure 13).

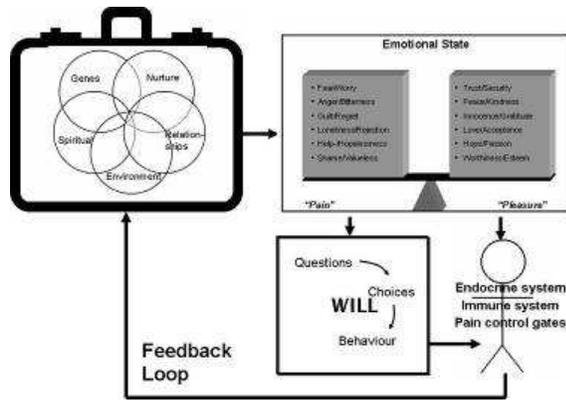


Figure 13

The right upper box containing a balance represents the limbic system. It receives its input from the cortex, represented in this model by the suitcase containing our five circles of human experience. How the limbic system output influences our physiology is shown by the stickman, and how it influences our decisions is illustrated by the will box. The feedback loop closes the model into a circle illustrating that our physiology and behaviour both in turn affect further input from the cortex through internal and external sensory data.

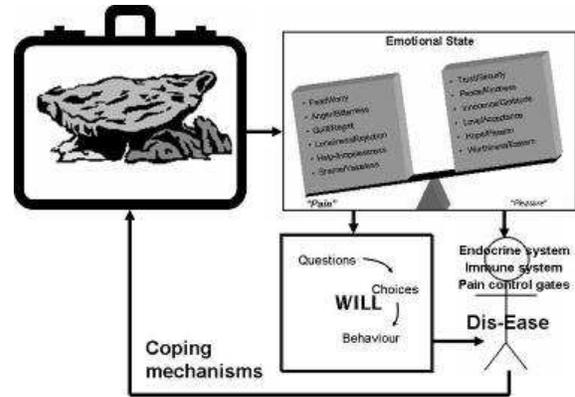
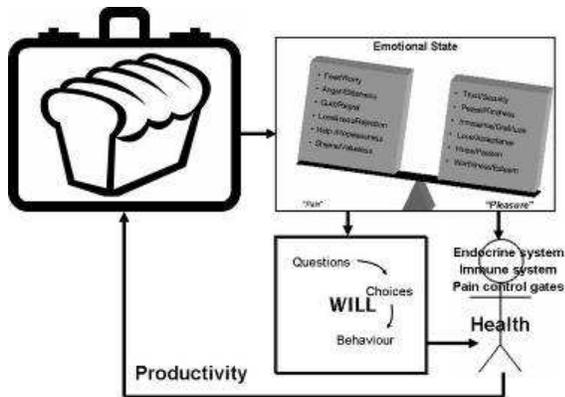


Figure 14

Figure 14 illustrates this when we are in a depressed or unresourceful state. When our suitcase is laden with stones, and we are burdened with excess baggage, our emotional state tips to the left with an irritable or depressed mood. Our emotional state then in turn affects our physiology causing *dis-ease* or illness (illustrated by the stickman) and our conscious mind (the will box). The choices we make influence our behaviour, which in most cases will be coping mechanisms that are likely to be *self-preserving* and *self-gratifying* in order to try to alleviate our pain. However, those coping mechanisms almost always add more stones to our suitcase, rather than lighten our load. Take the person who turns to the self-gratifying effects of alcohol to help alleviate the pain of a depressed mood. While he may temporarily get a reprieve, in the long run his alcohol use will cycle this model in a downward spiral known as the addiction cycle. This downward spiral in *dis-ease* states is virtually guaranteed—a depressed mood recalls more negative memories, which in turn depresses the mood further, and so on.

Compare this to Figure 15. Here assets predominate, illustrated by bread in the suitcase. This tips the emotional state to the right with a positive mood and a resourceful state. This in turn leads to a healthier physiology, as well as good choices that lead to productive behaviour, which in turn allows a person to deal with any remaining stones in their suitcase.

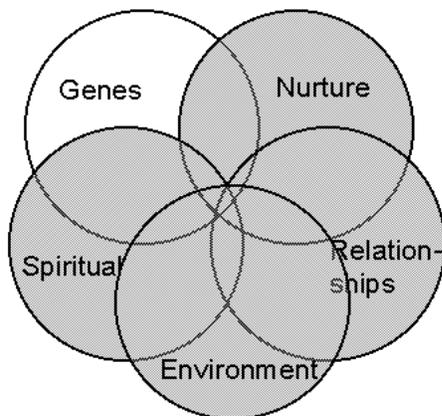


**Figure 15**

To summarize, then, the quality of our life is ultimately the sum total of our emotions, our resourceful emotions minus our negative emotions. If positive emotions predominate, we're happy; if negative emotions predominate, we're miserable. The seat of these emotions is located deep inside the brain, and our emotions are affected by our genetics and what we feed them. Our limbic system cannot distinguish fact from fiction, reality from imagination. If we put garbage in, we'll get garbage out on the output side, in our behaviour and in our health. The feedback loop is extremely powerful and unless we interrupt it, we are on an inevitable crash course. But there is hope.

### How we can be well

Now it should be clear that the one place where you can reverse the spiral is in the choices you make in the "will box." Here you have to choose between hanging on to your garbage and making choices to lighten the burden of your baggage. There are four changeable areas in our model as illustrated in Figure 16.

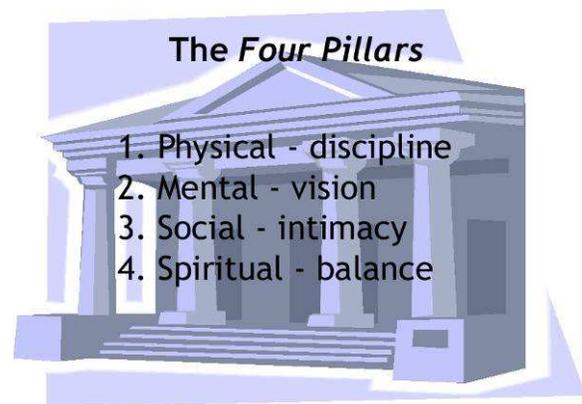


**Figure 16**

These four areas match what we call *The Four Pillars* of health and success:

1. The physical – a healthy lifestyle and a clean environment
2. The mental – a sharp focused mind, with vision, free of the past
3. The social – deep and intimate relationships that are marked by synergy
4. The spiritual – purpose and meaning in life, and balance.

Together these four pillars prop up your life and provide unshakable stability. To live them you need discipline in your diet, exercise and rest routines, deal with your past, build healthy relationships, and find meaning and purpose in life through healthy spirituality.



**Figure 17**

### Conclusion

While you are probably not 100% responsible for your pain, you are 100% responsible for your healing. Someone may have injured you in a traffic accident and they may be 100% at fault. Some of your own choices may have been unavoidable. You didn't choose your parents or your genes. But only you can choose to do something to start your healing journey.

Victim or victor? The choice is yours. I trust you will start your healing journey today.

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<sup>i</sup> Paul Brand & Philip Yancey, *The Gift of Pain*  
(Grand Rapids: Zondervan Publishing House, 1997),  
p. 17

<sup>ii</sup> Paul Brand & Philip Yancey, p. 208

<sup>iii</sup> Margaret McCain & J. Fraser Mustard, *Early Years  
Report 1999*  
(<http://www.cfcs.gov.on.ca/CFCS/en/programs/Children/OntarioEarlyYearsPlan/Publications/EarlyYearsStudy.htm>, 1999) Pg. 5