

Understanding Depression

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Depression has risen tenfold in Western nations since 1960. Yet, in many developing nations, depression is still very rare, despite hardship and tragedy.¹ This paper examines the factors that are known to cause mood disorders such as depression. By understanding these factors, we should be able to postulate prevention and treatment strategies.

What is depression?

Depression is a disorder of the central nervous system (brain), which leads to a blue, unresourceful mood, often accompanied by six pairs of painful emotions:

1. Fear and worry
2. Anger and bitterness
3. Guilt and regret
4. Loneliness and rejection
5. Helplessness and hopelessness
6. Low esteem and feelings of inadequacy

These emotions are often accompanied by physical symptoms such as fatigue, loss of libido (sex drive), inability to concentrate, difficulty with sleep (either oversleeping or insomnia), change in appetite, lack of focus or concentration, or physical pain. When severe, the psychic pain can be so severe that some contemplate ending their anguish with suicide.

Medical scientists know that depression is accompanied by changes in brain chemicals known as *neurotransmitters*. Some practitioners refer to these as “chemical imbalances.” There are at least four neurotransmitters which go out of whack in depression—serotonin, norepinephrine, dopamine, and GABA (gamma-aminobutyric acid). Whether their imbalance is cause or effect is the age-old chicken and egg question. The answer is probably both—painful emotions cause chemical imbalances, and chemical imbalances cause further painful emotions, a cycle that spirals downward.

Depression can be further subdivided into several types. We will limit our discussion in this paper to two: *unipolar* and *bipolar*. Unipolar depression is the one most often thought of where the person is down and stays down. In bipolar depression, the person has mood swings from very low and depressed, to very up and euphoric, sometimes up beyond normal. Most of our discussion

will focus on unipolar depression, although many of the principles apply to bipolar depression as well.

Our mood as a balance

It is possible to illustrate our mood using a simple balance that can tip either direction. On the left are the six painful emotional pairs already mentioned. On the right are their opposites:

1. Trust and security
2. Peace and kindness
3. Innocence and gratitude
4. Love and acceptance
5. Hope and passion
6. Worthiness and esteem.

Figure 1 illustrates our teeter totter model. The blue down arrow on the left indicates a depressed mood. The pink up arrow on the right indicates an up or happy mood.

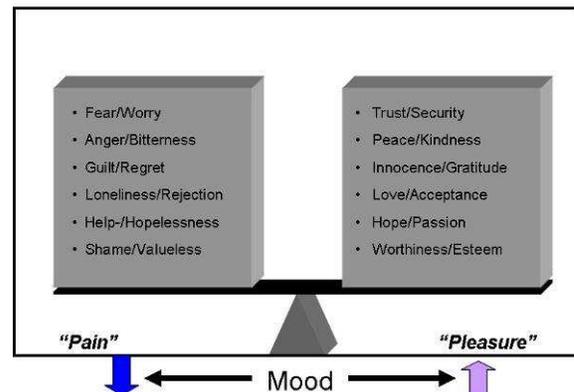


Figure 1

The balance in our model will tip to the left when any one pair from the left, or several pairs together, predominates 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. This is illustrated in Figure 2.

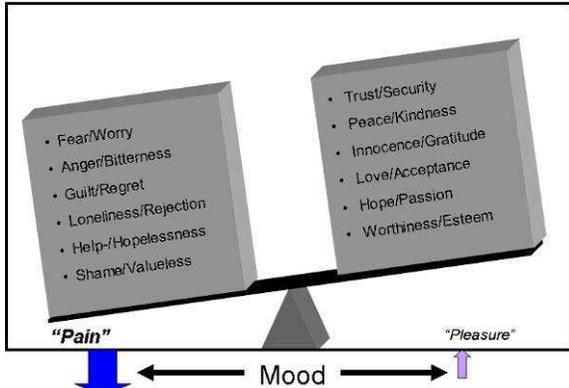


Figure 2

Similarly, when the pleasurable emotional pairs on the right predominate, the balance tips to the right, resulting in a more positive resourceful mood. This is illustrated below in Figure 3.

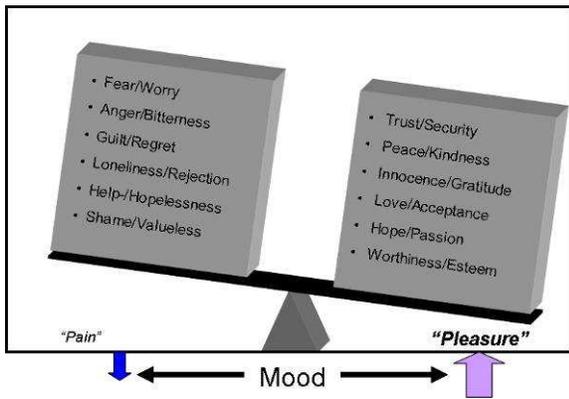


Figure 3

Now what interests us here is the question of cause. What *causes* one's mood or emotional state to tip back and forth? To answer that question, 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 4 is a simplified picture of the human brain.

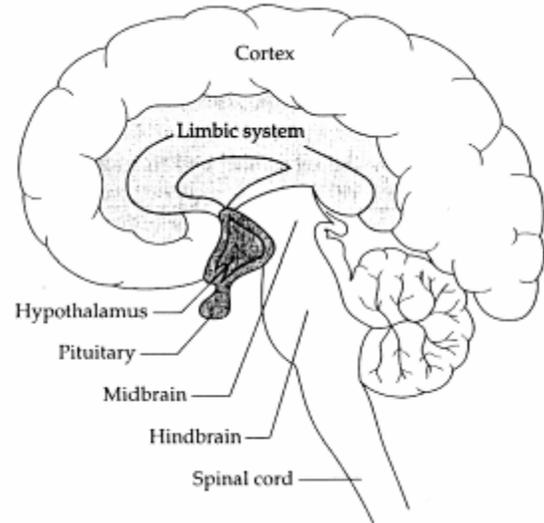


Figure 4

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*).

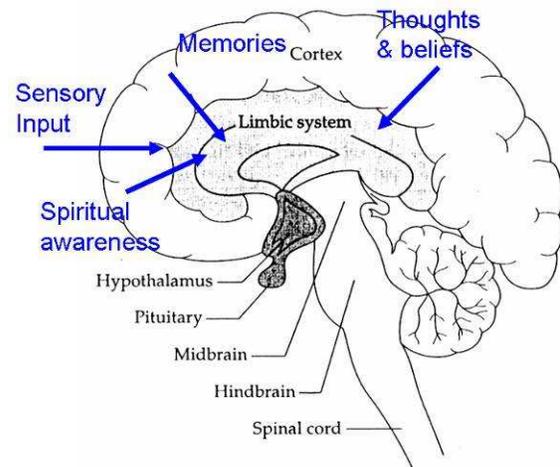


Figure 5

Figure 5 above illustrates limbic system input from the cortex above it. 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). The cortex takes input from these various sources and compares it to stored information. This generates our *cognitions*, or thoughts. And that information is then primarily forwarded on to our limbic system.

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 6). 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.

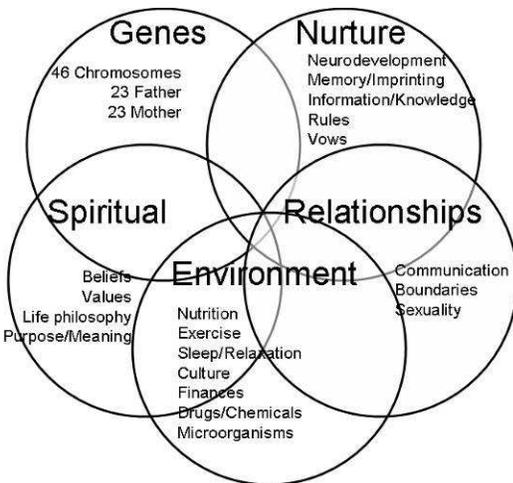


Figure 6

The five overlapping circles that make up our baggage in Figure 6 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 good mental health. Or we may have inherited genes that make us prone to mood disorders (liabilities) such as depression or bipolar illness. One parent may have left you positive genes, while the other gave you negative genes.

When discussing genetics in the realm of mood disorders, 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 clinical depression.ⁱⁱ Usually a stressor precipitates a depressive episode 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.”ⁱⁱⁱ

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 and anxiety later in life. These are called *attachment disorders*.

Childhood brain development is also affected by *cognitive* information (knowledge) 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. This often leads to distorted thinking, called *cognitive distortions*, which further perpetuate the painful emotional pairs that trigger depression. The most

common cognitive distortions that we encounter are listed in Appendix A. Chances are that if you suffer from a mood disorder, these distortions will be commonplace in your thinking.

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 and mental health. On the other hand, strained relationships and loneliness are both known to be major stressors, and therefore likely contribute to mood disorders. 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. The following are often associated with mood disorders:

- Overeating or eating disorders
- Alcohol dependence
- Narcotic dependence
- Smoking
- Lack of exercise
- Lack of light (e.g. short days in winter)
- High stress job
- Low socio-economic status (poverty) or financial debt

Physical fatigue and the slowing of physical functions, called *motor retardation*, are common accompaniments of depression. Inactivity leads to

further depression, which leads to further fatigue and motor retardation—another downward spiral. We will examine this mind-body connection later.

On the other hand, a well-balanced lifestyle with good nutrition, maintaining an ideal body weight, regular exercise, adequate light, avoidance of addictive chemicals and behaviours, and a measure of financial security promotes vitality and mental health.

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 mood and health. 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 and depression. 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 have already alluded to the fact that our physical health is affected by our mental health. Our emotions affect us physically. So we will now examine how output from the mood or emotional state of our limbic system influences our physical health and our behaviour. Figure 7 illustrates limbic system output.

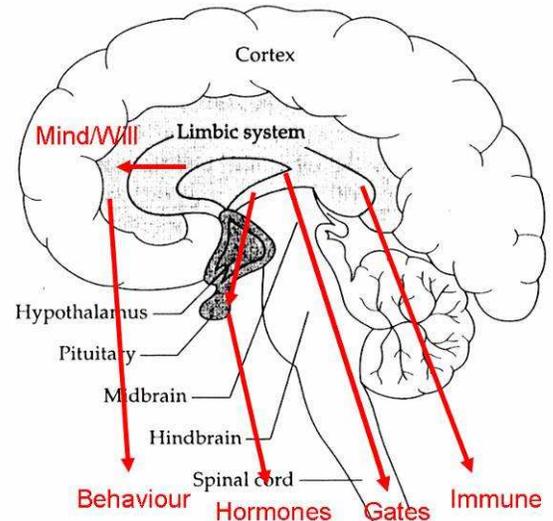


Figure 7

The first effect of the limbic system is on our *psychoneuroendocrine* 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. This affects our ability to alleviate physical pain, especially chronic pain. Thirdly, the limbic system influences our *psychoneuroimmunology* 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.

We now have all the pieces to illustrate a model of how all this works together mentally and physically (Figure 8).

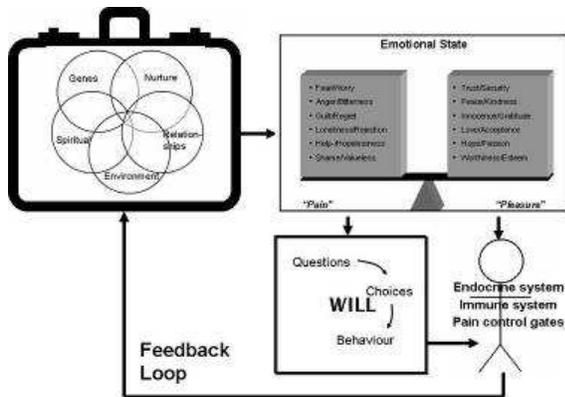


Figure 8

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.

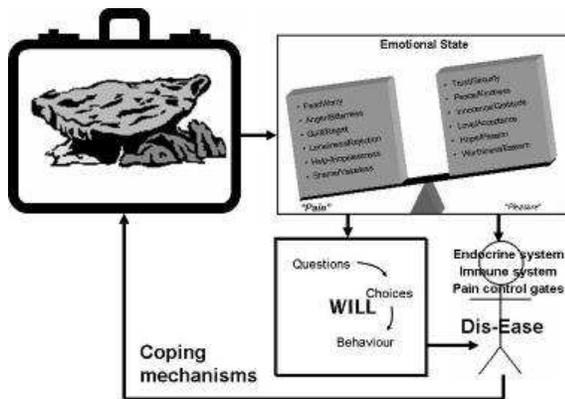


Figure 9

Figure 9 illustrates 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, often based on wildly distorted thoughts, 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 mood disorders is virtually guaranteed—a depressed mood recalls more negative memories, which in turn depresses the mood further, and so on. Similarly, the choice to close the curtains and spend a large part of the day in bed as an attempt to alleviate fatigue, only furthers the depression, causing a still further worsening of fatigue.

Compare this to Figure 10. 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.

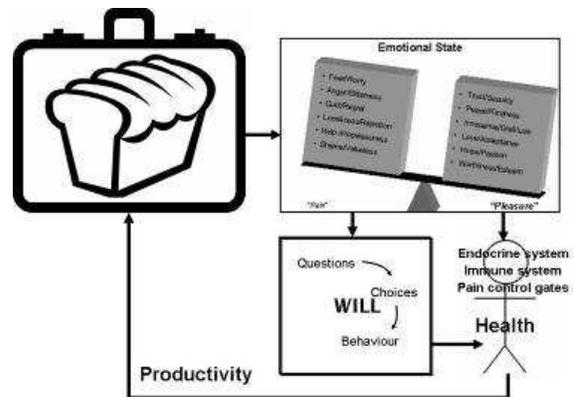


Figure 10

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 and depressed. 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?

Modern anti-depressants are very helpful in the treatment of depression and are often lifesaving in

those at risk for suicide. They are, however, not a cure-all or a magic bullet for everyone. So we need to use our model to look for other ways to prevent and treat depression.

From the model, it should be clear that the other place where you can help reverse the depression 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. Of the five areas in our baggage, there are four that we can work on to lighten our load as illustrated in Figure 11.

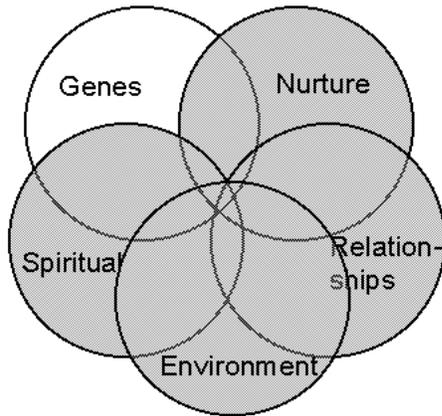


Figure 11

These four areas—environment, nurture, relationships and spiritual—match what we call *The Four Pillars* of health and success:

1. The physical – a disciplined 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.

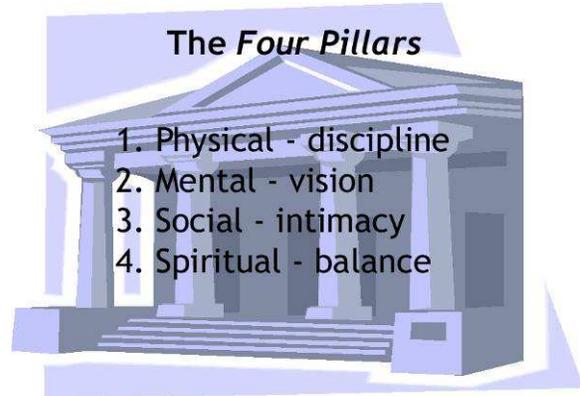


Figure 12

Conclusion

The cause of depression is multifactorial—besides a genetic predisposition there are stressors that build up over the years. And since there is more than one cause, healing is multifactorial. The best results combine anti-depressants with exercise and therapy that focuses on the cognitive distortions and relational stressors. Every choice you make to lighten the baggage in your suitcase will lead to improvement in your mental and physical health.

While you are probably not 100% responsible for your depression, you are 100% responsible for your healing. Someone may have abused you 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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Appendix A

Cognitive distortions^{iv}

1. *All-or-nothing thinking.* A tendency to evaluate yourself in extreme black-or-white categories. This becomes a basis for perfectionism. If your performance falls short of perfection, you see yourself as a total failure.
2. *Overgeneralization.* You see a single negative event as a never-ending pattern of defeat that will occur over and over again.
3. *Mental filter.* You pick out a negative detail and dwell on it exclusively so that your vision of all reality becomes darkened. Everything positive is filtered out.
4. *Disqualifying the positive.* You reject positive experiences by insisting that they don't count for some reason or other. You maintain a negative belief that is contradicted by your everyday experiences.
5. *Jumping to conclusions.* You arbitrarily jump to a negative conclusion that is not justified by the facts. An example is mind reading where you presume to know a person's thoughts or intentions.
6. *Magnification or minimization.* Either blowing things up out of proportion or shrinking them. Catastrophizing is the term used to describe thinking the worst.
7. *Emotional reasoning.* You assume that your negative emotions necessarily reflect the way things really are. "I feel it, therefore it must be true."
8. *Should statements.* You try to motivate yourself with "I *should* do this" or "I *must* do that." When you fail your own standard, you feel guilt and shame. Or you direct should statements to others, causing self-righteousness and bitterness.
9. *Labeling.* A negative self-image based on errors, which usually start with "I'm a ...". Or you may label others with statements beginning with "He's a ...".
10. *Personalization.* You assume responsibility for a negative event when there is no basis for doing so because it is outside your boundary.

ⁱ For reflections on the paucity of depression in Africa, see my Africa Journal (April-May 2005) at http://www.wholenessfc.com/Africa_Journal.pdf

ⁱⁱ A recent large study of twins by Virginia Commonwealth University found that heritability of depression in women is 42% and in men 29%. <http://www.vcu.edu/uns/Releases/2006/jan/010506.html>

ⁱⁱⁱ 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

^{iv} David D. Burns, M.D., *Feeling Good: The New Mood Therapy* (New York: Avon Books, 1999), pp 42-43