

Chapter 1

The Cinderella Effect

From the early morning when her slender foot touched the floor to the late hour when she raised herself into bed, Cinderella carried the burdens of the world, or at least of her evil step family. Yet the burdens were incremental, one chore at a time, and at last worked our heroine to utter exhaustion. For most of us, this metaphor encapsulates our working day, when like Cinderella our mental chores pile up, leaving us physically exhausted from innumerable and irreconcilable demands whose only escape is sleep. But rather than representing the effects of a day of heavy lifting, this effort is of a subtler yet no less exhausting sort, and reflects the constant flexion of the musculature or tension that stimulates a host of internal somatic or bodily events that we call stress. Muscular tension is an incremental thing, and occurs subtly, builds inexorably, and results in a state of physical exhaustion. But it's causes and cures are not what we think they are.

As popularly conceived, stress begins with a threat and a surprise, like a tiger pouncing from a bush, eliciting a series of bodily reactions that cause us to fight or take flight. But I propose that the tensions of our daily life are not reactions to a threat, but coping mechanisms that are decided by nonconscious processes of learning. Understanding how tension is learned and the abstract properties of our environment that signal it are key to our understanding of stress, yet they also overturn many of the sacrosanct ideas that form our current knowledge of its causes and cures. Cinderella was a myth, and so is much of what we know about stress. But the *Cinderella Effect* is real, and understanding it is key to a wholly new way of looking at and dealing with this insidious curse of the modern age. But first, let us recount some unexpected fairy tales.

The Mythology of Stress

Pick up any advice column, magazine article, popular book, or scholarly article on stress,

and you will likely learn that:

- *Stress is a disease*
- *Stress is a reaction to 'demand'*
- *Stress is a 'flight or fight' response that evolved over millennia*
- *Stress is an unavoidable fact of modern life*

You will also learn that the remedies of stress primarily consist of:

- *Attentive focusing or meditating, thus evoking a 'relaxation response'*
- *Challenging or correcting unproductive or irrational thoughts*
- *Improving one's mastery of the environment, or learning social, mental, or physical skills*

In this book, you will learn that all of this is untrue. Stress is not a disease, a reaction, an instinct, or is inescapable. Moreover, attentional focus or meditation is not the cause of relaxation, the relaxation response is not a response, and mastery of one's external environment or controlling irrational thoughts have little to do with the daily stresses that we confront daily. In other words, we've got stress, its causes and its cures, almost entirely wrong.

Now dem's fightin' words to those whose common sense and professional experience speak otherwise, but ironically this contrarian opinion is fully supported by the empirical data on stress revealed through social psychology, neuroscience, and learning theory. As I will demonstrate throughout this book, by misinterpreting the data on stress to fit comfortable and profitable explanations, more parsimonious and effective alternatives are ignored or neglected, along with the equally simple and more powerful procedures they entail. Ultimately, procedure is key to the conundrum of stress, because heaven knows the truth about stress is too uncomfortable to academic ears.

The popular causes and cures for stress are dependent upon *what* we think of the world, or the contents of our thoughts, whether they are highly reasoned, irrational, or in the case of

meditation, highly attenuated or focused. But this is in general not true. At the end of this book I will present the proof of my argument in a procedure that will demonstrate practically that it is not *what* we think but *how* we think that is the root cause of stress and the key to a state of permanent relaxation. That is, stress occurs because of not formal but *abstract* properties of our environment that are generally non-consciously perceived, yet are easily controlled. To those who want to skip the intellectual twists and turns ahead that argue this point, I recommend the chapter on the procedure of 'radical relaxation'. But for those brave souls who want the straight dope on the often dopey thinking that constitutes common and academic opinion on stress, we will begin below. It all starts of course, with a problem, and it's definition.

A Stressful World

It's everywhere, a modern bane, and is so raised in popular consciousness that its causes and cures have descended into cliché. It is anxiety, tension, a case of nerves. It is a destroyer of productivity, health, and peace of mind. It is stress. Because we all know it, and think we know all about it, we do not question it, and that's the rub. Indeed, the argument below, stamped in one fashion or another in every work on the subject, is familiar.

It all started of course with lions and tigers and bears. In paleolithic times, they were everywhere, a hungry threat to proto-humanity. But of course, natural selection found a way. And so when a threat was sighted, heard, or otherwise sniffed, it was off to the races, or given the circumstances, up with your dukes. The instinct of 'flight or fight' became ingrained in the race, and today we find it behind all the stresses that pain, exhaust and trouble us to this day.



Its all quite reflexive really, as our daily stresses are summoned by the mundane demands of a workaday existence that ignite a concert of bodily events that like a choir have an equal and simultaneous voice. Hormones surge, the heart races, muscles tense, and thought loses clarity. Stress becomes as inevitable as a tide, an emotion that in this Age of Anxiety is as inescapable for us as a fever was to our ancestors in a plague year. And with the cause of stress comes cures almost as ancient. Focus is the stimulus, as evocative of relaxation as anxiety is to the sight of a bear or the apprehension of a day caught in traffic. Focus is core to the meditative disciplines that presume an antagonistic procedure and a complementary process to the events that spark and sustain stress. In lieu of merely avoiding the demands that make for stress, a 'relaxation response' is inferred that counters the response of stress.

Tension and relaxation become reflexes, and only become complex in terms of the mediating events of body and mind that allow them to be. The problem is, mediators are conflated with causes, leading stress and anxiety to be defined through a gumbo of terminology that see causes everywhere, from an overactive hypothalamus to the metaphor of a mental module imprinted by an evolutionary process long ago. And with this inability to understand comes an inability to control.

Consider this example. A long distance runner sprints ahead because he anticipates a won race, better health, getting from A to B faster, or just the good feeling that ironically comes from sustained exertion. And so he runs, and to make sure he can sustain running, his heart beats faster, his muscles tense, hormones such as adrenaline and endorphin are released, and his entire metabolism changes to enable him to keep up the pace. His body is in a state of 'allostasis', an altered and sustained physiological state that allows the body to sustain a specific behavior. So what is the proximal cause of all this? No less than the flexing and contracting of the musculature that is the behavior of running. And the proximal cause of running, a mere expectancy of outcome or reward, or cognition.

For voluntary behaviors such as running, eating, etc., the allostatic events that subsequently occur are not 'behavioral', or in other words occur because of behavior or response-outcome (R-S) expectancies. They represent instead response events that happen because of the impingement of a stimulus, or stimulus-response (S-R) behavior, and occur because of the *behavior* and not the idea of running. The runner can indirectly control the allostatic behavior attending running by changing the behavioral events that mediate that behavior, in this case running itself. Thus the physiology of running is important, but incidental to his

main desire to predict and control his behavior.

Behavioral (R-S) and reflexive (S-R) events feed forward and feed back to one another, and are mutually interdependent, or what we would call S-R-S behavior. When we can conceptually and pragmatically separate the two, we have no problem in controlling and understanding our behavior. However, when behavioral and reflexive events are obscured and conflated, then we can have neither. Stress or anxiety is a case in point. But as with running, the behavioral cause is as easily determined, and just as one must stop running to catch one's breath, to take a breather from anxiety, you just relax. With stress, as with running, the primary mover is literally the same.

So then , what is Stress?

First, the skeletal muscles contract and the hypothalamus, a small neural center in the brain, reacts. The hypothalamus, among other organs, influences the autonomic nervous system, which involves involuntarily activities of bodily organs. It also mediates activity in the pituitary gland, which releases hormones into the bloodstream. Under stress, as the muscles tense, breathing becomes faster and deeper. The heartbeat quickens. Some blood vessels constrict, raising the blood pressure and almost closing the vessels right under the skin. The throat muscles and those in the nostril force these passages wide open. The stomach and intestines temporarily halt digestion. Perspiration increases, and secretion of mucous and saliva decreases. The pupils of the eye dilate involuntarily.

At the same time the adrenal glands release two hormones, epinephrine and norepinephrine- which affect circulation, elevating heartbeat and blood pressure. These hormones signal the spleen to release more red blood corpuscles. They enable the blood to clot more quickly, and encourage the bone marrow to produce more white corpuscles. They also increase the amount of fat and sugar in the blood.

While these events are occurring, the pituitary gland secretes two more hormones, abbreviated TSH and ACTH, TSH and ACTH increase the rate at which the body produces energy and which reinforce the signals sent to the adrenal glands through the autonomic nervous system. ACTH also causes the adrenals to release about 30 other stress related hormones.

-Source: International Stress Management Association (www.isma-usa.org)

As this generally accepted definition depicts, the stress reaction is a complicated thing, but

its effective cause is not. Indeed, by understanding and controlling muscular tension, this complicated neurobiological edifice dissipates like a ring of smoke. Like the runner in our earlier example, the supporting or 'allostatic' mechanism is essential to the understanding of tension but incidental to its control. Yet in almost all academic and popular definitions of stress, this distinction between the behavioral (muscular contraction) and reflexive (autonomic and hormonal reactions) is ignored or denied. All of the biological events in stress occur conceptually as reflexive or S-R events, there is nothing about it that is behavioral. Moreover, muscular tension as an effective cause is also ignored. Similarly, if muscular tension and its physiological correlates are reflexive mechanisms, then muscular relaxation and its physiological correlates must also be reflexive as well. What is extraordinary about this point of view is that it does not reflect a matter of fact, or a conclusion reached after scientific debate and test, but of sheer and simple *neglect*. It is simply not convenient to believe otherwise.

As we shall note in the coming chapters, the position that supports purely S-R explanations of tension and relaxation is utterly false, and has no support in the empirical domain of science. Indeed, science supports the *opposite* conclusion, that tension is indeed a behavioral response, and that its opposite, namely muscular relaxation, is a non-behavioral response, or a mere resting state. These facts, which represent old but neglected science, will be coupled in the coming chapters with newer findings in behavioral neuroscience and social psychology to not only redefine but simplify our understanding of what stress is and the procedures necessary for its control. Ironically, to do this, we must first appeal not to the methods of science, but of magic.