

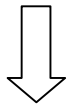
The Stress of Life

What is stress?

Everybody has it, everybody talks about it, yet few people have taken the trouble to find out what stress really is. Many words have become fashionable when scientific research revealed a new concept likely to influence our way of thinking about major issues of life or to affect our everyday conduct. Such terms as “Darwinian evolution,” “allergy,” and “psychoanalysis” have all had their peaks of popularity in drawing-room or cocktail-party conversations; but rarely are the opinions about them based on a study of technical works written by the scientists who established these concepts.

Nowadays, we hear a great deal at social gatherings about the stress of executive life, retirement, exercise, family problems, pollution, air traffic control, or the death of a relative. But how many of these defending their strong convictions about these matters with heated arguments have bothered to learn the scientific meaning of stress and the mechanism of its workings? Most people have never even wondered whether there is a difference between stress and distress!

start editing here



The word “stress,” like “success,” “failure,” or “happiness,” means different things to different people, so that defining it is extremely difficult although it has become part of our daily vocabulary. Is stress merely a synonym for distress? Is it effort, fatigue, pain, fear, the need for concentration, the humiliation of censure, the loss of blood, or even an unexpected great success which requires the complete reformulation of one’s entire life? The answer is yes and no. That is what makes the definition of stress so difficult. Every one of these conditions produces stress, but none of them can be singled out as being “it,” since the word applies equally to all the others.

In writing this book, it seemed logical to begin with what the physician means by the term *stress*, at the same time familiarizing the reader with the few technical expressions that are essential. (For those quite unacquainted with biology, the Glossary at the end of the book will also be of help.)

Stress is the nonspecific response of the body to any demand made upon it. To understand this definition, we must first explain what we mean by *nonspecific*. Each demand made upon our body is in a sense unique, that is, specific. When exposed to cold, we shiver to produce more heat, and the blood vessels in our skin contract to diminish the loss of heat from the body surfaces. When exposed to heat, we sweat because the evaporation of perspiration from the surface of our skin has a cooling effect. When we eat too much sugar and the blood-sugar level rises about normal, we excrete some of it and burn up the rest so that the blood sugar returns to normal. A great muscular effort, such as running up many flights of stairs at full speed, makes increased demands upon our musculature and our cardiovascular system. The muscles will need supplemental energy to perform this unusual work; hence, the heart will beat more rapidly and strongly, and the blood

pressure will rise to dilate the vessels, thereby increasing the flow of blood to the muscles.

Each drug or hormone has such specific actions: diuretic drugs increase the production of urine; the hormone adrenaline augments the pulse rate and blood pressure, simultaneously raising blood sugar, whereas the hormone insulin decreases blood sugar. Yet, no matter what kind of derangement is produced, all these agents have one thing in common: they also increase the demand for readjustment. This demand is non-specific; it requires adaptation to a problem, irrespective of what that problem may be.

In other words, in addition to their specific actions, all agents to which we are exposed also produce a nonspecific increase in the need to perform adaptive functions and thereby to re-establish normalcy. This is independent of the specific activity that causes the rise in requirements. The nonspecific demand for activity as such is the essence of stress.

From the point of view of its stress-producing or stressor activity, *it is immaterial whether the agent or situation we face is pleasant or unpleasant*; all that counts is the intensity of the demand for readjustment. The mother who is suddenly told that her only son died in battle suffers a terrible mental shock; if years later it turns out that the news was false and the son unexpectedly walks into her room alive and well, she experiences extreme joy. The specific results of the two events, sorrow and joy, are completely different, in fact, opposite to each other, yet their stressor effect—the nonspecific demand to readjust herself to an entirely new situation—may be the same.

It is difficult to see how such essentially different things as cold, heat, drugs, hormones, sorrow, and joy could provoke an identical biochemical reaction in the body. Nevertheless, this is the case; it can now be demonstrated, by highly objective quantitative biochemical determinations, that certain reactions are totally nonspecific, and common to all types of exposure.

It has taken medicine a long time to accept the existence of such a stereotyped response. It did not seem logical that different tasks, in fact any task, should require the same response. Yet, if you come to think of it, there are many analogies in everyday life in which highly specific things or events share the same nonspecific feature. At first sight it is difficult to see what could be the common denominator between a man, a table, and a tree, yet they all have weight; the pressure exerted on the scale balance does not depend on such a specific feature as temperature, color, or shape, any more than the stressor effect of a demand upon the body depends on the kind of adaptive reaction that is required to meet it.

Or consider the appliances in a house that has heaters, refrigerators, bells, and light bulbs, which respectively produce heat, cold, sound, or light, in a most specific manner; yet to function they all depend upon one common factor—electricity. A member of a primitive tribe who never heard of electricity would find it very difficult to accept that all the manifold phenomena just mentioned depend upon the satisfaction of a common demand: the provision of electrical energy.

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PRWR 617
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The Stress of Life Edited Copy

Although the word “stress” has become part of our daily vocabulary, defining it is extremely difficult. The word “stress,” like “success,” “failure,” or “happiness,” means different things to different people. Is stress merely a synonym for distress? Is it effort, fatigue, pain, fear, the need for concentration, the humiliation of censure, the loss of blood, or even an unexpected great success which requires the complete reformulation of one’s entire life? The answer is yes and no. Every one of these conditions produces stress, but no one condition can be singled out as being “the definition” of “stress,” since the word applies equally to all the others.

In writing this book, beginning with the physician’s meaning of the term *stress* and familiarizing the reader with a few essential terms seemed most logical. (For those quite unacquainted with biology, the Glossary at the end of the book will also be helpful.)

Stress is the body’s general response to any stimulus. To understand this definition, we must first explain the difference between *general* and *specific* responses. Each stimulus our body is exposed to produces a *specific* response. For example, when exposed to cold, we shiver to produce more heat, and the blood vessels in our skin contract to diminish the amount of heat our body loses. When exposed to heat, we sweat because our body cools when perspiration evaporates from our skin. When we eat too much sugar and our blood-sugar level rises above normal, we excrete some sugar and burn the rest, so that the blood-sugar level returns to normal. A great muscular effort, such as running full speed up many flights of stairs, makes increased demands upon our musculature and our cardiovascular system. The muscles will need supplemental energy to perform this unusual work; the heart will beat more rapidly and strongly, and the blood pressure will rise to dilate the vessels, increasing the blood flow to the muscles.

Each drug or hormone also creates such specific responses: diuretic drugs increase the production of urine; the hormone adrenaline augments the pulse rate and blood pressure, simultaneously raising blood sugar; whereas the hormone insulin decreases blood sugar. Yet, no matter what kind of specific responses these stimuli produce, all of them have one thing in common: they also increase the need for a readjustment response. This response is general; it requires adaptation to a problem, irrespective of what that problem may be. In other words, in addition to their specific responses, all stimuli to which we are exposed produce a general increase in the need to perform adaptive functions and re-establish normalcy. This general need for activity is the essence of stress.

The stress response is independent of the activity that causes the specific response. From the point of view of its stress-producing activity or stimulus, *it is immaterial whether the stimulus or situation we face is pleasant or unpleasant*; all that counts is the readjustment

need's intensity. For example, the mother who is suddenly told that her only son died in battle suffers a terrible mental shock and extreme sorrow; if years later it turns out that the news was false and the son unexpectedly walks into her room alive and well, she experiences extreme joy. Her specific responses to the two events, sorrow and joy, are completely different, in fact, opposites. Yet, based on the two events' shared intensity, the stress response—the general need to readjust herself to an entirely new situation—may be the same.

Understanding how such different stimuli like, cold, heat, drugs, hormones, sorrow, and joy could provoke an identical biochemical reaction in the body is difficult. Medicine has taken a long time to accept the existence of such a stereotyped response. It did not seem logical that different tasks, in fact any task, should require the same general stress response. Nevertheless, this is the case; certain reactions are totally general, and common to all types of stimuli, which can now be demonstrated by highly objective quantitative biochemical determinations.

If you come to think of it, there are many analogies in everyday life where stimuli or events share the same general feature. For instance, at first sight, one has a difficult time seeing the common denominator between a man, a table, and a tree. Yet, they all have weight; the pressure exerted on the scale balance does not depend on a specific feature such as, temperature, color, or shape, any more than the body's stress response to a stimulus depends on the kind of adaptive reaction required.

Or consider some appliances in a house: heaters, refrigerators, bells, and light bulbs, which produce heat, cold, sound, and light respectively; yet to function they all depend upon one common factor—electricity. A member of a primitive tribe who never heard of electricity would find it very difficult to accept that all of these many items depend upon the satisfaction of a common need: the supply of electrical energy. Without the general electrical energy supply, the appliances could not produce their specific electrical functions.

Brittnee Alford
12/16/12
Final Exam Edit
Notes on the Process

Initial Reaction

When we first read this piece in class, I was confused and lost in all of the terms. The writing was a bit wordy and hard to follow. I wanted to make this piece more reader-friendly and conversational.

Overall Strategy

My high order concerns included creating clarity and consistency. I put related material together and separated unrelated material. I also eliminated wordiness, prepositional phrases, and nominalizations. It was extremely difficult to remove all prepositional phrases without changing the voice of the writer, so I removed the ones that I felt were most awkward. Nominalizations were also tricky, but I changed most to establish more action in the sentences. To clarify the differences between the two responses, I changed “nonspecific” to “general,” and replaced “demand” with “stimulus,” “stimuli,” or “need” where appropriate.

I also simplified some of the elevated language for the reader. If the writer wants his reader to understand stress, he needs to speak the reader’s language. Still, I tried to maintain a less is more approach with this edit. Even with my high order revisions, I tried to make sure the writer’s voice remained present. Lastly, my lower order concerns included spelling and grammar.

Results

As the text stands now, I think it is much more clear and consistent. Readers can easily follow the writer’s thoughts and technical terms without confusion. I think they have a better understanding of the difference between a *specific* response to a stimulus and a *general* response to any stimulus (stress).