

General Adaptation Syndrome: Hans Selye

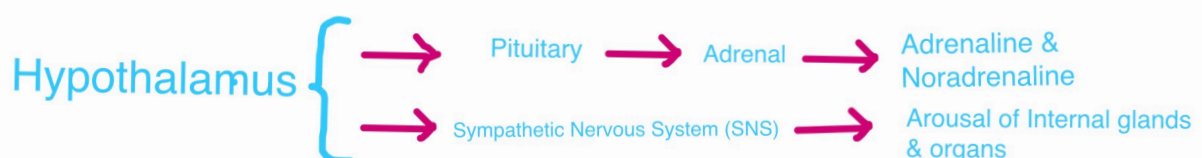
Hans Selye defined stress as "the non specific response of the body to any demand", which means that people respond to stress only through one kind of physiologically bodily response. Selye(1956, 1976) termed the body's response to stressors the General Adaptation Syndrome (GAS). The general adaptation syndrome consists of three stages, as under.

- (1) The alarm reaction
- (2) The stage of resistance
- (3) The stage of exhaustion.

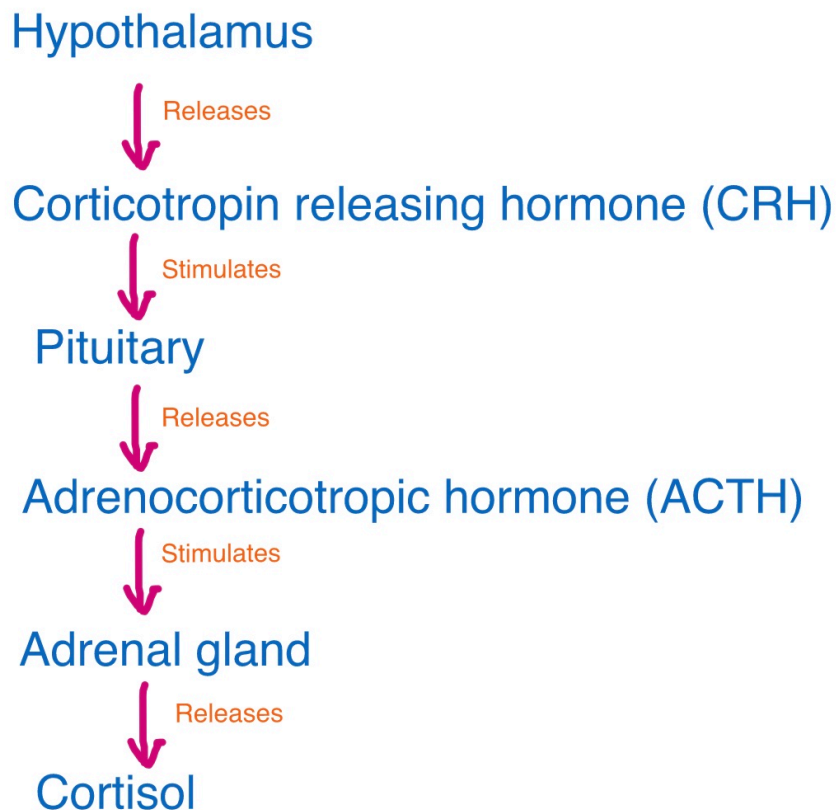
(1) Alarm Reaction: The alarm reaction is essentially the emergency response of the body. The body senses a threat and the flight-or-flight response is initiated. During this phase the hypothalamus pituitary adrenal axis (HPA axis) becomes active. The hypothalamus sends parallel messages in two directions. One, it stimulates pituitary, which in turn stimulates the adrenal medulla to secrete epinephrine and norepinephrine. Two, it stimulates the Sympathetic Nervous System (SNS) which leads to arousal of internal organs and glands.

This leads to arousal reactions in body such as,

- Heart rate increases
- Blood pressure increases.
- Blood sugar rises.
- Blood flow to gut decreases.
- Blood flow to heart, brain and muscles increases.



Stage of Resistance: If the stressor continues to be present, the stage of resistance begins, wherein the body resists the effects of the continuous stressor. However, resistance to new stressors is impaired during this stage. During this stage, the physiological changes of Alarm phase are in effect. In addition to the previous bodily arousal, there are other hormonal responses which help maintain the body's fight against the stressor.



Hypothalamus secretes corticotrophin-releasing hormone (CRH) into the blood stream. CRH stimulates pituitary gland to secrete adrenocorticotrop hormone (ACTH). ACTH then stimulates the adrenal cortex to secrete cortisol, which is also known as the stress hormone.

Cortisol - the stress hormone, helps the body fight the stressor by bringing about bodily changes, such as,

- It promotes formation of glucose in the body
- Leads to higher blood sugar levels
- Breaks down fats and proteins and converts them into glucose

Prolonged high levels of cortisol have a negative impact on the body's immune system, and heart health. In case the stressor is still present and the body is constantly fighting against it, there comes the next stage which is called the stage of exhaustion.

Stage of Exhaustion: The final stage of the general adaptation syndrome is the stage of exhaustion. In this stage, the body's capacity to respond to both continuous and new stressors has been seriously compromised. For instance, due to the actions of cortisol, a person may no longer be able to ward off infection and may become sick and perhaps die. Or, because of other stressor-induced hormonal effects, stomach ulcers, diabetes, skin disorders, asthma, high blood pressure, increased susceptibility to cancer (Bammer & Newberry, 1983) or a host of other diseases may occur at this stage or late in the stage of resistance.

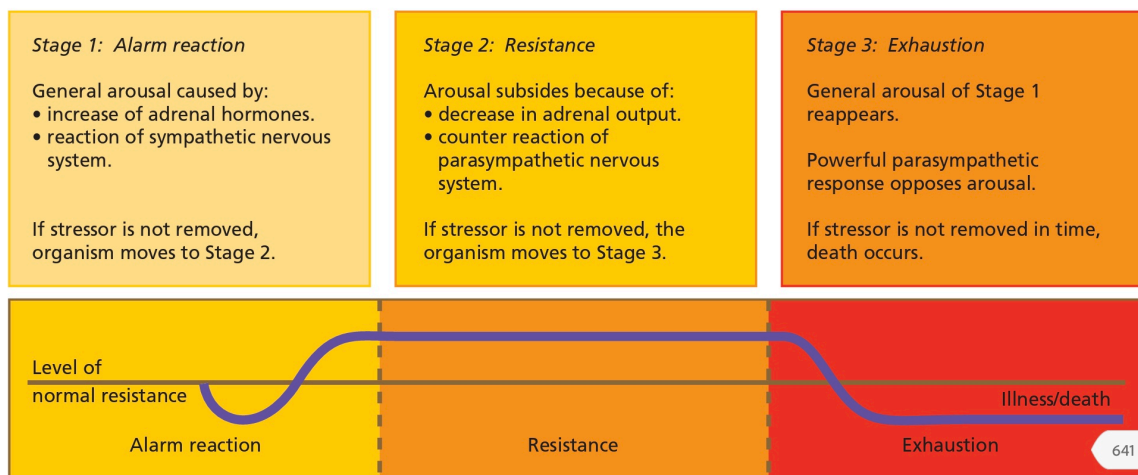


FIGURE 14.4
The General Adaptation Syndrome

Source: Zimbardo, G, Johnson, R. L. & McCann V. (2012)