

Phobia: Biological Theories

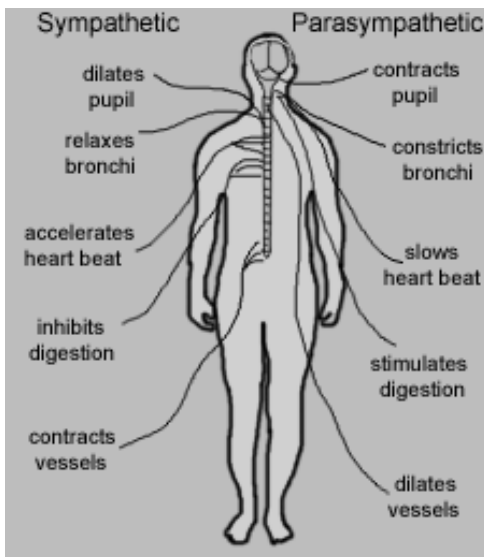


This activity will help you to:

- Recall biological processes involved in stress
- Identify biological structures that may be involved in phobias
- Understand and comment on evidence regarding biological explanations of phobias

Biological Systems Involved in Fear and Anxiety

The Sympathetic Nervous System



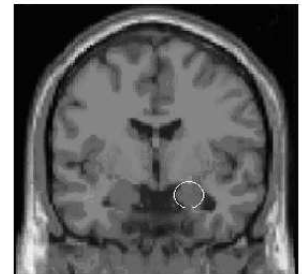
When we studied stress you saw how threats and stressors lead to a pattern of increased activity on the sympathetic nervous system called the fight of flight response. In the fight of flight response, the functioning of the body changes in order to prepare for action.

Activation in the sympathetic ANS increases in response to perceived threat. However, it must increase beyond a certain level before a full-scale fight or flight response is triggered. The level beyond which activation must pass is called the panic threshold. It varies from person to person and possibly between situations.

The Limbic System

Emotional responses, including fear and panic, generally involve a set of brain structures called the limbic system (we came across this when we looked at dreaming).

Of particular interest when looking at phobias is a structure called the amygdala. This is a structure about the size of an almond that is duplicated in each hemisphere of the brain. The amygdalae are involved in responding to startling and fearful stimuli. The right amygdala seems specifically attuned to responding to emotional signals from others. Its activity increases when a person is shown pictures of others making angry or fearful facial expressions. The limbic system relies heavily on the neurotransmitters serotonin and GABA.



Source: Hariri et al (2002)

Based on the above information, suggest some hypotheses about biological abnormalities in people with phobias.

Biological Investigations of Phobia

Below are some brief descriptions of research studies looking at the role of biological abnormalities in phobia. For each study, write some brief notes outlining the conclusions that might be drawn from it. Once you have done this, write a couple of paragraphs of commentary explaining, with reference to these examples and the genetic data we have also looked at, the extent to which phobias can be explained wholly in biological terms.

Study	Your comments
<p>Liebowitz et al (1985) stressed panic disorder patients, social phobics and clinically normal controls by giving them air to breath that contained high levels of carbon dioxide. Whilst the controls did not respond, both the clinical groups were prone to having panic attacks. Panic disorder patients had more panic attacks than phobic patients.</p>	
<p>Pine et al (1999) compared amygdala responsiveness in social phobics and clinically normal controls. The social phobics produced greater amygdala responses to fear and startle-inducing stimuli than the control group.</p>	
<p>Hariri et al (2002) identified a group of people with an abnormality of the gene that codes for some of the serotonin receptors in the brain. Compared with normal controls, their right amygdalae were significantly more responsive to pictures of angry and fearful faces.</p>	