

Formally defining and describing the mechanisms of attention

George Sperling
University of California, Irvine

Abstract

In the external world, people (and other organisms) are confronted with tasks that involve responding to stimuli. Certain patterns of behavior are described as exhibiting attention. In the internal world, attention is an allocation of mental processing resources that is implemented by neural activity in the brain. A critical aspect of most tasks is the mapping of the set of Stimuli [s], and the set of Responses [r] into a real-valued Utility function $U[s,r]$ that describes the value of every possible stimulus-response combination. The ideal tasks for measuring attention change only U between the different attention conditions. We additionally consider some common attention tasks, how the demands of attention affect resource allocation, current theories about which mental processing resources are involved in attention tasks, and how multiple-concurrent attention demands are implemented.