The mechanism of sensory compensation and the magic of the brain

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When we unfortunately lose part of the body, the rest of the parts become more 'sensitive', which is the magic of the brain in the concept called 'compensatory mechanism'.

When you wake up in the middle of the night, amidst a completely enclosed space in the dark, you lie on the bed, close your eyes, and feel as if you have an auditory ability, you can hear every sound. even the smallest, from the soft creaking sound emitted in the bed cavity next to where the beetles are poring over the 'night meal', until the soft rustle of each leaf outside the box window when the winds gently surf. Can a quiet night make us easily hear smaller noises? Yes, but only a part. In fact, when you lose a sense, or simply that sensation stops working, the brain will 'order' the remaining senses to 'increase productivity', making these senses become more sensitive. If you're still selling, try now, try plugging in a headset, opening a favorite piece of music, closing your eyes and feeling very carefully whether it seems 'detailed' and 'full of music'. more 'not'. If you notice you will see that every time you "listen to sound", people tend to close their eyes to listen and feel better. It is completely a natural and miraculous process of the human body.

1. No need to go to the hospital can still diagnose middle ear otitis with a smartphone application

Sense and magic of the brain

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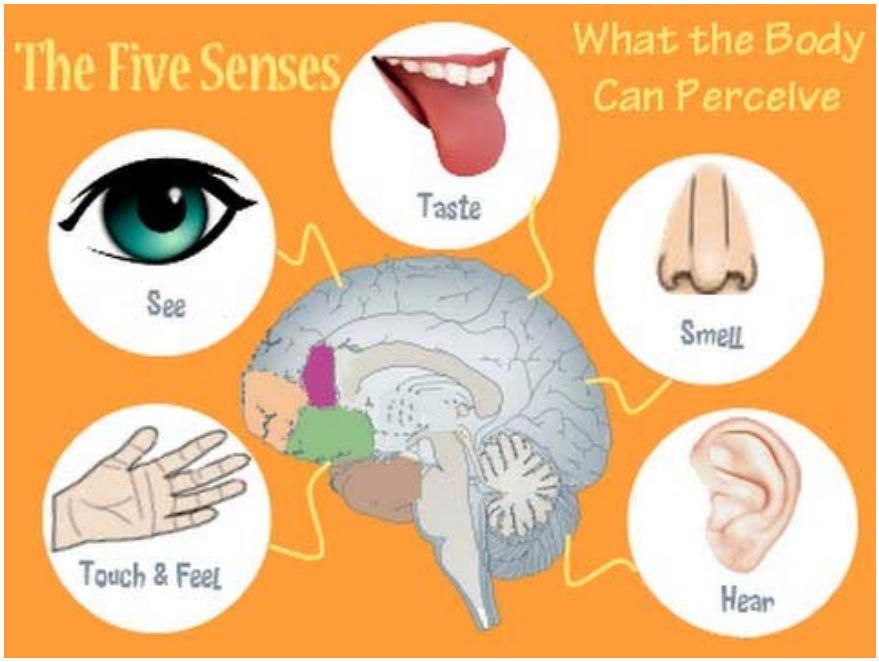
Sense and mechanism of compensation

Going deeper into the problem, there are many scientific studies done with people with long-term sensory and sensory deficiencies, such as blindness or deafness, which seem to support this concept. The less fortunate people who lose their visual ability from birth are actually able to feel and hear things more sensitively than ordinary people and in many cases, this outstanding ability plays acts as a clear compensation for visual impairments.



1. Improve the effectiveness of assessing depression status by AI models

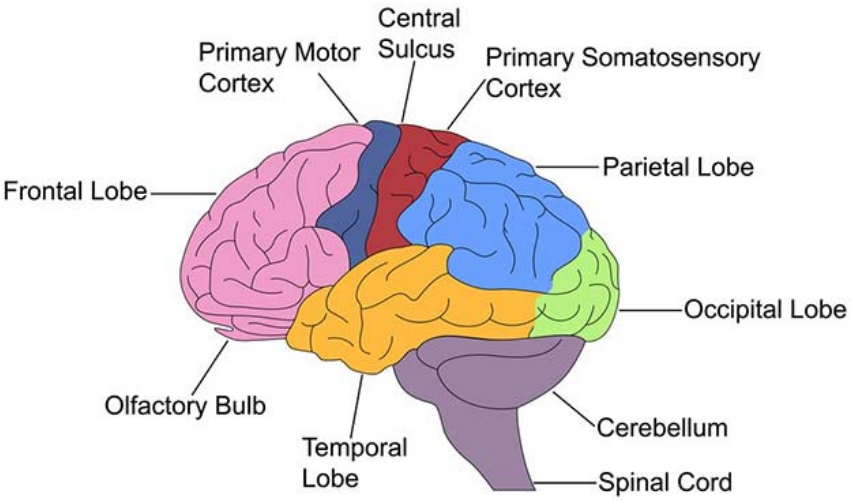
Analysis of brain function input can explain the origin of these 'sensory powers'. When one of the main input sources (senses) for the brain loses its function, the brain area responsible for sensing that senses will not 'sit down', but turn to support. activities of the remaining sensory management areas. This can often occur relatively flexible between the sensory systems. For example, for the blind, the part of the brain responsible for visual activity can provide flexible support for the auditory or tactile department, depending on the specific situation. However, the same phenomenon is entirely possible within each sensory region. For example, the brain area that controls the activity of an amputated hand will be able to support the other hand, making it more sensitive in each activity, or even the rest of the arm itself. Amputation will also be more sensitive. For a long time, scientists have argued that having more brain space means more practicality and therefore, the cognitive power is thus

enhanced.

1. Scientists develop brain scanners like helmets

Although this view has so far achieved a very high consensus in the field of medicine in general and in the science of human body research in particular, some controversies have suddenly erupted. in the past few years with the objection, and an article published in the Journal of Experimental Psychology (Journal of Experimental Psychology) with the title: 'Blocking Input to One Finger Using Anaesthetic Enhances Touch Perception and Learning in Other Fingers' (Limiting translation: Limiting tactile input from a finger using anesthesia to enhance the sensibility of other fingers), was given to explain all conflicts. Please mention here some key issues.

Inconsistency



1. IBM researchers analyzed breast cancer cell structure with AI

One reason behind recent controversies is that sensory enhancement in blind people may simply be due to their greater dependence on the remaining senses such as touch, and at the same time increase the likelihood of contact with better tactile discrimination, such as Braille learning. Indeed, scientists have been able to train people with intact visual abilities but still possess an impressive ability to distinguish Braille from those who are well trained. Thus, it can not be affirmed that blind people can use the visual management capacity in their brains to supplement the tactile management capacity.

Some other studies have also found no evidence that lack of sensory senses promotes sensory awareness in specific areas, such as the limb after amputation. So what is the truth here?

The experiment on the fingertips

To investigate further, scientists tested the cause of a temporary sensory deficiency in a group of volunteers and compared the results with those of the control group - a total of 36 participants. family. By using a simple anesthetic - Lidocaine, a mild anesthetic used in dental clinics - scientists have completely disabled the ability to sense and perceive movement on one. fingers of the participants. Anesthetic is used twice (on consecutive days), and lasts about 2 hours.

1. Improve the effectiveness of assessing depression status by AI models

Scientists have found that the short period of sensory cognitive deficiency on one finger can lead to significant improvements in the sensory perception of adjacent fingers. In other words, the fingers that are directly adjacent to the anesthetic finger become significantly more sensitive. This result is perfectly reasonable when compared to another experiment done on animals that are quite similar to humans, which are primates. Research on primates shows that when a finger is lost, nearby fingers will "take over" the brain region that was previously used to control lost fingers.

Thus, the study results show that the brain will immediately increase sensory perception in one of the remaining fingers, prioritizing in the adjacent order - indicating a lack of short-term feeling actually can bring functional benefits to the senses, without manual training.

1. Scientists teach AI to diagnose brain cancer

Furthermore, in an experiment on other volunteer groups, scientists have also shown that disabling sensory perception on the index finger significantly enhances the effectiveness of the applied sensory training process. For the middle finger - its effect is stronger and more pronounced on the hand than the numbness group.

Rehabilitation after stroke, stroke, injury and more

It can be said that the results obtained from the above study can not only help resolve the conflict, but also are particularly useful in practical application. Unlike some previous studies, researchers have now been able to show that lack of senses has different effects and can be used to increase the effectiveness of training. senses after serious injuries such as seizures, paralysis, or stroke .

More specifically, this result brings promising potential for rehabilitation treatment activities after brain damage. For example, the sensory function of the hand, or even the arm affected after a stroke can be improved by therapies that limit the sensory capacity of the opposite hand or arm without being affected. enjoy. At the same time it also helps to show that remedy for damaged parts after stroke requires the participation of both unaffected components. If this method can be proven to be highly effective, it is possible to use this knowledge to further promote the development of more optimal therapies.

There are still many things to clarify

Besides, the study can also help answer a bigger question in the field of neuroscience.

Although the study results show that brain resources can be flexibly allocated in the sensory manner, that is, one finger can use the other's brain region to support sensory perception. However, it is unclear whether the brain can learn to reuse a 'region' designed to support other senses. Thus, scientists still cannot know whether the brain's visual control area (assuming) can be used for a completely different purpose. New perspectives show that this type of rearrangement may be too extreme and brain regions are limited in the general function that they were originally designed for.

1. Magnetic nanoparticles are designed to prevent internal bleeding

Although no one can deny the existence of changes in brain activity after the body suddenly loses a sensory function, it is not clear whether those changes are purely one. Does 'function', or does it affect the way we move, think or behave? However, one thing can be affirmed, is that we are getting closer to understanding complex brain processes, allowing sensory experience that the ultimate goal will not be outside of improving. human life.