

# Sensory adaptation



Sensory Adaptation Abstract This paper describes three home type experiments and their conclusions as related to sensory perceptions. This paper will also describe the meaning and concept of sensory adaptation, and how it is evident within the discussed experiments. A description of the sensory systems that are involved with the experiments, as well as what happens from the nerve receptors to the brain. Sensory Adaptation Sensory adaptation refers to how a person's body adjusts to the effects of a certain stimulus, over a period of time. It is diminished sensitivity to the sensory receptors due to overstimulation. Some examples of this include temperature and darkness (Examples of Stimulation, n. d.). The concept of sensory adaptation is that all senses depend on the working nervous system. Our senses start to work when something stimulates our nerve cell receptors. These receptors send signals to the brain. These signals in turn Impulse frequency decreases during constant stimulation with time (Sensory Adaptation, 2001). Experiment 1- Sandpaper After rubbing the index finger over very coarse sandpaper a few times, the rating for the sandpapers coarseness on a scale from one( being very soft) and seven (being very coarse), the rating is a 5 for the first perception. The second time of rubbing an index finger over the same sandpaper, the rating again is a five. My perception of the coarseness of the sandpaper is stayed the same. Only my fingers felt smoother and softer from rubbing on the sandpaper (AIU Online Multimedia Course Material, 2011). Experiment 2- Sugar Water vs. Plain Water With this experiment, a small amount of sugar water is swished around the mouth for several seconds without swallowing it. Then a small amount of regular water is swished around in the mouth for several seconds without swallowing it. Upon completing this experiment, it was noticed that

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the sugar water tasted less sweet after several seconds on swishing it around. With the regular water, there was no change in taste after several seconds of swishing (AIU Online Multimedia Course Material, 2011).

**Experiment 3- Water Bowls** In this experiment, hot, cold and lukewarm bowls of water were used to dip the hands in. One hand in the hot bowl and the other hand dipped in the coldwater bowl for three minutes. The hands were then, at the same time, transferred to the bowl of lukewarm water. The sensation I experienced was that for the left hand that was in the hot water bowl, felt the sensation that the lukewarm water bowl was hotter than the very hot bowl of water. The right hand (cold-water bowl) did not experience any other sensation aside from the first experience of the cold water (AIU Online Multimedia Course Material, 2011). Adaptation is evident in each of the three experiments described above. With the experiments on the hot and cold bowls of water, this adaptation relates to temperature. Once the hand has experienced the same temperature for a period of time, the hand gets used to the temperature. Temperature change stimulates the thermo receptors (Examples of Stimulation, n. d.). The human skin is full of different receptors that sense heat, cold, pressure and pain. There seem to be more cold receptors than heat receptors maybe due to evolutionary reasons. Both receptors will react to temperature changes first. Extreme temperature will stimulate pain receptors in addition to thermo receptors (Sensory Adaptation, 2001). With the sugar water and the plain water experiment, chemical receptors were stimulated by chemical changes. Receptors on the tongue are chemoreceptors. Chemoreceptors within organs detect change in the blood. These changes in the blood include glucose levels, blood oxygen, and hormone levels. The sense of taste seems to work by volume. All taste

buds seem to work by quality and the quantity of the perceived taste. The sense of smell and the sense of taste seem to very similar. Thus, the sense of taste seems to work from the sense of smell. (Sensory Adaptation, 2001).

The sandpaper and finger experiment, tissue damage is sensed when pain receptors are stimulated by excessive chemical, electrical, heat or mechanical energy. Sensory adaptation occurs in all senses with the exception of the sense of pain, which adapts very little. The sense of pain can be reduced by sensory overload. If you accidentally hit your head, strongly rubbing the surroundings of the area hurt will reduce the sensation of pain. There is no actual adaptation (Sensory Adaptation, 2001).

References AIU Online Multimedia Course Material. (2011). Retrieved 12 09, 2011, from American Intercontinental University: <http://www.mycampus.aiuonline.edu/multimediacoursematerial/medicalrecords> Examples of Stimulation. (n. d.). Retrieved 03 31, 2012, from E-How: <http://www.e-how.com> Sensory Adaptation. (2001, 12 28). Retrieved 03 31, 2012, from Everything 2: <http://www.everything2.com> .