CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
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Project Number
J0318

Project Title
Sensory Confusion Creates Neuropathic Pain: Phase II

Abstract

Objectives/Goals
To determine if your mind will confuse skin sensations of hot and cold to produce a false sensation of pain (neuropathic pain).

Methods/Materials
I did two experiments. In experiment 1, I showed that when a cold knife handle, with a warm knife handle on either side was placed on the subject's finger they experienced neurological confusion (a false burning sensation). In experiment 2, the same temperature knives were placed in the same order on the subject's lower forehead, they had sensory confusion. The subjects were 20 people, ranging in age from 8 years old to 56 years old.

Results
In these experiments I showed how the experiences of spatial summation and the thermal-grill ilusion both made a false burning sensation happen. Spatial summation is a blending of sensations over a large area of skin and the thermal-grill illusion is when fast nerve fibers that carry cold sensations are weakened by warm sensations then the slower nerve fibers that signal pain are left over.

Conclusions/Discussion
This science project demonstrates how neuropathic pain can be caused by the sensory confusion of the thermal-grill illusion and spatial summation. I hope that this science project will help people understand and care about all the millions of people who are suffering from neuropathic pain.

Summary Statement
To show how your mind confuses skin sensations of hot and cold to produce a false sensation of pain.

Help Received