

# Quality Cutaneous Sensitivity Kit User's Instructions



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The Quality Cutaneous Sensitivity Kit has been designed for rugged laboratory use and provides all necessary materials (except blindfold) for studies in heat sensitivity, cold sensitivity, touch sensitivity, and pressure sensitivity. The required apparatus for the above studies is all housed in a convenient attaché case fitted with molded polyfoam to restrain and protect each unit. All or any of the following studies may be conducted with this kit.

### **Experiment I—Relative Touch Sensitivity**

#### **Problem**

Determine the relative sensitivity of selected areas of the skin.

#### **Material & Apparatus**

5 Piece Touch test, blindfold (Lafayette's Model 33010 blindfold goggle or similar), paper and pencil.

#### **Procedure**

Blindfold Subject (S). Apply the bristle of the aesthesiometer to 8 areas of the skin in the following manner: press the smallest bristle (2.83) against skin until it flexes *slightly*. Maintain this slight flex and ask if S can feel the bristle; if S cannot, apply the second bristle (3.61) and so on until S reports feeling bristle. Apply the next larger bristle and then repeat the above procedure in the reverse direction until S reports that he can no longer feel the bristle. Be sure to record the number of the first and last bristle felt each time. This ascending and descending test procedure should be repeated three times for each bristle at each of the eight sites. Suggested sites: volar pad of index finger, back of hand, top of forearm (area with hair), underside of forearm (area without hair), lips, cheek, back of neck and calf of leg.

#### **Results**

Construct a table listing the eight areas of the skin tested. Beside each area listed, present the mean ascending threshold, mean descending threshold and combined mean threshold.

#### **Discussion**

What areas of the skin are most sensitive and which are least sensitive? What biological significance can you associate with the relative sensitivity of different areas of the skin? How is the differential touch sensitivity of various parts of the skin associated with behavior?

### **Experiment II—Two-Point Touch Threshold**

#### **Problem**

Measure cutaneous acuity. Visual acuity is measured by determining how close two objects can be placed and still be seen as separate. Cutaneous acuity is measured by determining how close two points applied to the skin can be and still be felt as two distinct points.

#### **Materials & Apparatus**

Three-point aesthesiometer, paper, pencil, and blindfold

#### **Procedure**

Blindfold Subject (S). Pre-test on yourself on three areas of different sensitivity as determined by experiment one. Setting the points of the aesthesiometer about  $\frac{1}{4}$ " wider than the expected threshold, apply aesthesiometer gently to skin. Ask S if he feels one or two points. If he replies—"two," then reduce the point-to-point distance by  $\frac{1}{32}$ " and repeat. Continue this descending series until S reports feeling only one point. Then, beginning at  $\frac{1}{32}$ " below the setting at which S reported feeling only one point, begin an ascending series. This should be repeated 3 times. Note: apply aesthesiometer gently to prevent the skin from getting irritated.

#### **Results**

Construct a table listing the three areas of the skin tested. Beside each area listed, present the mean ascending threshold, the mean descending threshold, and the combined mean threshold.

#### **Discussion**

Compare and contrast the results of this experiment with your results and your conclusion of experiment A.

### **Experiment III—Temperature Sensitivity**

#### **Problem**

To locate and record spots on the skin which are maximally sensitive to heat and maximally sensitive to cold.

## Material & Apparatus

2 water pans, immersion heater, ice, thermometer, 4 heat cylinders and 4 handles, ink pad, grid stamp, and magnifying glass.

## Procedure

Select an area of skin and mark with dot stamp (a relatively hairless region such as the underside of the forearm is preferable). Stamp the same dot pattern twice on your record sheet. Place the temperature cylinder in the cold water pan (55–65 F) for several minutes. Then, using the plastic clips, pick up a cylinder, dry it quickly, and place the point gently against one of the dots stamped on the S's arm. Have subject report "cold" whenever cold is felt. Record the cold spots by making an appropriate mark on your record sheet. Be sure to provide time between probings of the same spot to allow sensitivity to recover. Repeat each area at least twice.

Repeat the above procedure using the cylinders warmed in hot water. Use immersion heater to heat the water to 110–120 F. Gently probe the same area of skin having the S report "warm" whenever that sense is felt. Note: beware, S may tend to say the probe feels warm when they mean it feels neutral. Record the warm spots on the second dot pattern on your record sheet.

If you have been careful not to irritate the skin (watch for distinct reddening) test each dot for touch sensitivity. Use the 5 Piece Touch Test. Apply the smallest bristle S consistently feels. Record data. Also record the location of each hair in the mapped area. Use the magnifying glass to be sure each hair is found.

## Results

Draw a large diagram combining all the data recorded. Indicate how many spots were found that were sensitive to heat, cold, and touch.

## Discussion

Compare and contrast the data you collected for heat, cold, and touch. What role did the presence of hair play? What is the biological and the behavioral significance of what you found?

## Experiment IV—Paradoxical Temperature Sensitivity

### Problem

To explore the adaptation and after image phenomenon related to temperature sensitivity.

### Materials & Apparatus

4 heat cylinders and handles, 2 pans, immersion heater, ice, thermometer and heat grill.

### Procedure

*Part One:* Cool a temperature cylinder to about 40 F and then gently press the back end of it against Subject (S)'s forehead for 5 seconds then remove. Ask S, "what sensation did you feel while it was in place? What sensation did you feel after its removal? Did the sensation of temperature (not touch) seem to come from a single spot on your forehead or did you feel the sensation in a circle? Record answer.

*Part Two:* Have S place one hand in pan of water cooled to 50 F and one hand in pan of water which S agrees feels like "luke warm." When S reports that the hand in cold water feels warmer, place that hand in the "luke warm" water and record S's reported sensation. Record.

*Part Three:* Question—does simultaneous stimulation by both heat and cold produce a sensation different from either? Cool one comb in the cold water and heat the other in the warm water. Remove, dry and place one comb on the board. Lay forearms across this comb and note sensation. Repeat this using just the other comb. Now, after returning both combs to their respective water baths, again remove them, dry them and lay forearm across grill. Record the reported sensation, return combs to their baths and then dry and place on board. Place finger on cold comb only, on cold and hot comb together, and then on hot comb only. Record sensation.

### Results

Summarize in writing the results of each part.

### Discussion

Discuss the phenomenon of after image and of adaptation and relate the results of the above experiments to the discussion. Were there any findings that appear to be significant in explaining the observed behavior of people?

# Terms and Conditions

## LIC Worldwide Headquarters

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3700 Sagamore Parkway North  
Lafayette, IN 47904, USA.

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