

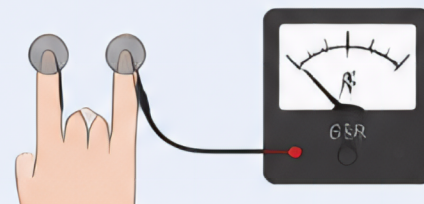


Making a Simple Lie Detector

using Galvanic Skin Response (GSR)

WHAT IS GSR?

Galvanic Skin Response (GSR) is a small change in the skin's ability to conduct electricity. When a person becomes stressed, excited, or nervous, sweat glands become more active. This increases the skin's conductance, which we can measure. This project builds a simple device that detects those changes.

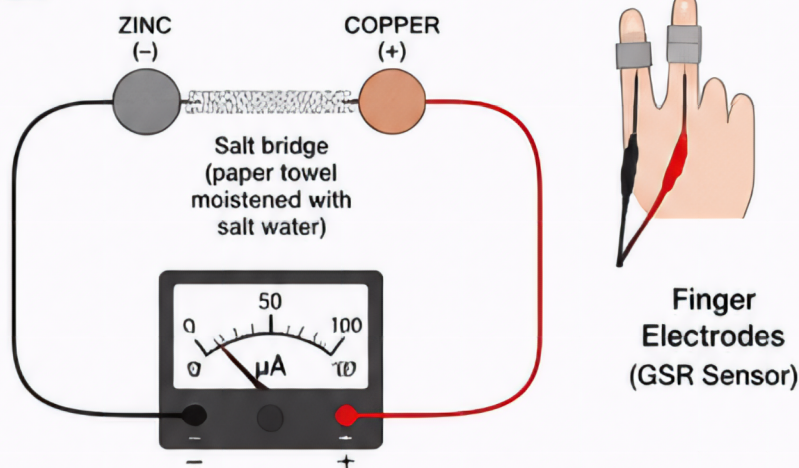


MATERIALS

- 2 metal disks (zinc and copper) (e.g., from an old battery or galvanic cell)
- 2 alligator clip wires
- 1 analog microammeter (0–100 μA is ideal) (or a sensitive analog meter)
- 2 finger electrodes (metal foil, coin, or small metal plates)
- Conductive tape or medical tape
- Wires with alligator clips
- Alcohol wipes or soap and water
- Notebook and pen



DIAGRAM



HOW IT WORKS

The zinc and copper disks create a small voltage (like a battery). The meter outside the circuit measures a tiny current that flows through your skin between the two finger electrodes. When you sweat more (from stress or arousal), your skin conducts more electricity, so the current increases and the meter reading rises.



DATA TABLE (EXAMPLE)

Trial	Situation / Question	My Answer (Truth/Lie)	Meter Reading (μA)	Notes (What I felt)
1	Baseline (relaxed)	—	15	Calm
2	Think of favorite hobby	Truth	18	Happy
3	Math test tomorrow	Truth	30	Nervous
4	Is $2 + 2 = 5$?	Lie	42	Felt uneasy
5	Did I eat the last cookie?	Lie	38	Worried



SAFETY NOTES

- This project uses a very small, safe voltage from a galvanic cell. It is not enough to harm you.
- Do not use a mains-powered device in this circuit.
- Do not use this device on people with pacemakers or medical devices.



PROCEDURE

- 1. Build the GSR Circuit**
Set up the circuit as shown in the diagram. The meter should be in series with the two metal disks.
- 2. Prepare Your Skin**
Wash your hands with soap and water. **Dry thoroughly.** Clean the tips of your index and middle finger with an alcohol wipe.
- 3. Attach the Finger Electrodes**
Clip or tape the finger electrodes to two fingers on the same hand (index and middle work well).
- 4. Get a Baseline**
Sit quietly and relax. Watch the meter and record the baseline reading for 1–2 minutes.
- 5. Test Reactions**
Think about something that is neutral, then something exciting or stressful. Notice how the meter changes.
- 6. Try "Truth or Lie" Questions**
Have a partner ask you questions with known answers. Observe whether the meter tends to rise more for "lies" (or for certain types of questions).
- 7. Record Results**
Write down your observations and meter readings.



THINK & DISCUSS

- What factors might affect GSR besides lying? (e.g., nerves, excitement, embarrassment, fear)
- Was your lie detector 100% accurate? Why or why not?
- How could you improve your setup?