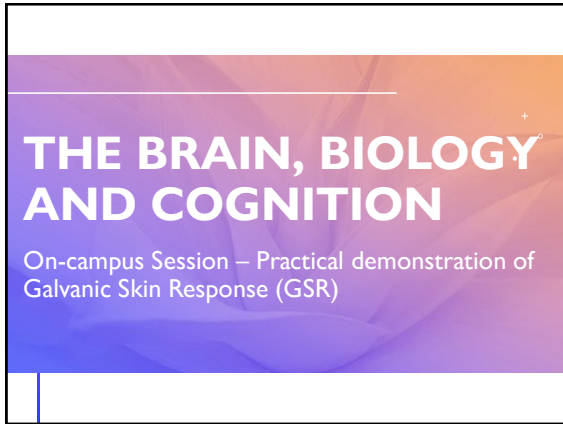
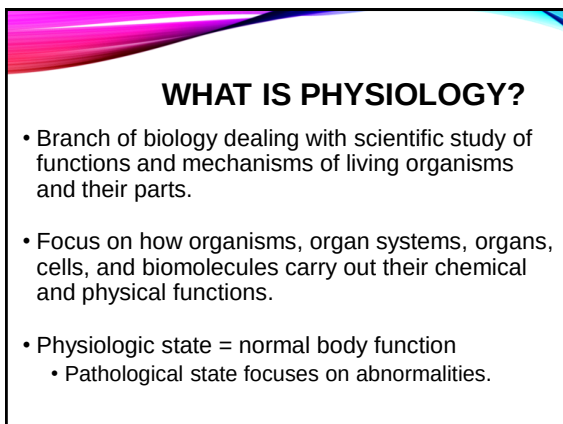




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3

WHY EXAMINE PHYSIOLOGY IN PSYCHOLOGY?

- A person may seem calm, but they may be concealing considerable stress/anxiety.
- Objective physiological measures can reveal this.
- E.g., measure electrical conductance of the skin
 - An indication of psychological or physiological arousal
- Provide essential information to further understand or explain behaviours.

4

WHY EXAMINE PHYSIOLOGY IN PSYCHOLOGY?

- Psychophysiology ties together physiological basis of psychological processes:
 - Emotional responses to physical environment.
- Types of physiological measures:
 - Heart rate
 - Skin resistance
 - Skin temperature
 - Muscle tension (EMG)
 - Neuronal activity (EEG)
 - and much more!

5

ELECTRODERMAL ACTIVITY (EDA)

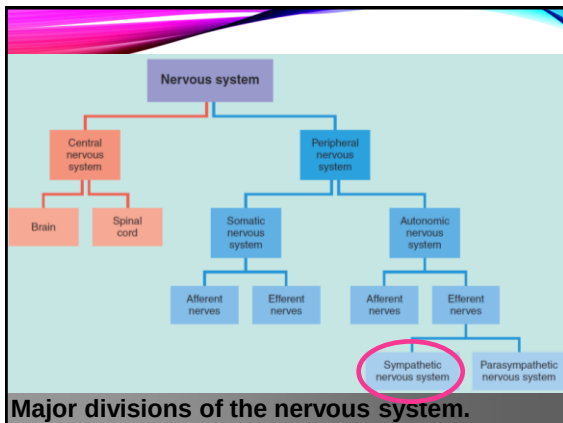
- Variation in electrical characteristics of skin
 - Can also be referred to as:
 - Skin conductance
 - Galvanic skin response (GSR)
 - Electrodermal response (EDR)
 - Galvanic skin conductance (GSC)
 - And many more.....

6

GALVANIC SKIN RESPONSE

- Skin resistance varies with state of sweat glands.
- Sweating controlled by sympathetic nervous system.
- Skin conductance is indication of psychological or physiological arousal.
- If sympathetic branch of autonomic nervous system is highly aroused, sweat gland activity also increases.
- This increases skin conductance and is seen as a measure of emotional and sympathetic responses.

7



8

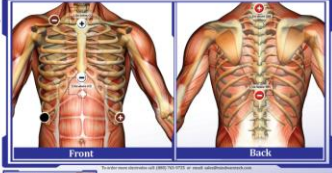
TECHNOLOGY FOR CAPTURING PHYSIOLOGICAL RESPONSE



9

ELECTRODE PLACEMENT

Electrode Placement
ECG, Impedance Cardiography, GSR



Recommended Practices

Before placing electrodes, clean area (except GSR) with rubbing alcohol. Use water to place of alcohol for GSR site cleaning. For comfort, attach temp leads to electrode before placing on the subject.

- Place on the bottom left rib near the side
- Place on the right collar bone (sternum)
- Place on the bottom right rib on the subject's side (if not required when used with Impedance Cardiography)
- Place on the spine, 1.5 inches (3.81 cm) above the D10 electrode
- Place on the spine, 1.5 inches (3.81 cm) below the D10 electrode
- Similar to the GSR configuration, place on the regular watch just above where the collar bones meet. If the subject is wearing a shirt, apply the electrode to the shirt right to prevent artifact.
- Similar to where the configuration place just below the armpit (on right hand placed). Make sure any armpits or bands do not interfere with the electrode.
- Place high on the subject's palm (distal area) for impedance measurement or on the middle finger (proximal area) for GSR (if needed for pheromone). Priority is not a factor. Do not prepare with alcohol.

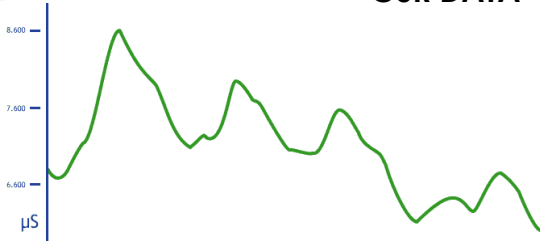
Legend:
 ECG: (Red circle) (Black circle)
 Ground: (Black circle)
 CCS: (Red circle)
 SNS: (Green circle)
 GSR: (Green circle)

Secure lead wires using medical tape to prevent motion caused by participants. Significant data should be lost whenever electrode used tape.

Mind Ware
The Science of the Mind

10

GSR DATA



- Measured in microsiemens (uS) which is a unit of conductance
- Typical skin conductance signal has amplitude between 0.5-45 uS
- EDA signals characterized by slow rolling changes in amplitude, with sharper changes associated with specific responses.

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ETHICAL CONSIDERATIONS

- Possible allergic reaction to electrode gel.
 - But materials are widely used for research and recognised as being relatively comfortable and non-intrusive.
- Although, prior to a study commencing, researchers must ask if the participant has any allergies to products.
- If they are unaware of any allergies or experience an adverse reaction, the study must be immediately terminated, equipment must be removed, and if necessary medical help should be sought.

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ETHICAL CONSIDERATIONS

- Embarrassment:
 - If heart rate is measured, participants have to locate bottom of ribs and collarbone in order to attach ECG electrodes.
 - During recruitment, participants must be made aware of this and should wear something allowing ease of doing this to reduce any potential embarrassment.
 - This information must be included during consent to remind participants of the procedure; actual locations of electrode placement can also be shown through an indicative image.

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ETHICAL CONSIDERATIONS

- Participants must be made aware of the purpose of using any physiological recording
- They must be given the right to withdraw at any point without penalty.
- They must also be debriefed appropriately and care taken when removing any electrodes

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ETHICAL CONSIDERATIONS

- Risk of potential allegations of misconduct on the part of the researcher can be minimised by having two researchers present at all times, one male and one female for heart rate.
- Researchers must ensure participants are comfortable and happy during the application of electrode process and immediately stop if at any point the participant feels uneasy with the process.
- Researchers must ensure they behave appropriately throughout the study and with the utmost integrity.
- Collected data should be assigned a code, which is not linked to an individuals name or identifiable info and stored safely.

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ETHICAL CONSIDERATIONS

- Any transfer of data from mobile acquisition device to analysis software package on the PC must be done securely and stored under password protection.
- Researchers must always ensure equipment is kept in a good condition and free from damage.
- If there is damage, it must not be used, and the damage should be reported immediately.

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 **LET'S NOW HAVE A
LOOK AT GSR IN ACTION**

17


SESSION CLOSE
Any final questions?

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