

UWE Psychology - Equipment and Resources for students

Equipment and Resources available at UWE

- Summary of equipment available for Psychology students
- Software and programming experiments

Biopac



1 - Biopac MP35 Data acquisition unit.

Used to record physiological data, such as heart rate.



2 - Attachment of electrodes to the forearm.

Example of how you can attach electrodes that are connected to Biopac to record someone's muscle activity.



3 - Continuous Blood Pressure Monitor

This is a Continuous Blood Pressure Monitor used to record changes in systolic and diastolic blood pressure over the course of an experiment.



4 - Example of participant setup using Biopac.

The participant is wearing a transducer around the chest which is connected to a Biopac to measure respiration. The transducer measures the inhalation and exhalation and plots the data in the software.

Overview of the physiological data you can record with Biopac.

- Range of physiological measurements can be recorded.
- Up to 4 signals recorded simultaneously.
- Suitable for measuring physiological changes during psychological tasks.
- Electro-dermal activity (EDA) - changes in the electrical conductivity of the skin
- Electro-cardiogram (ECG) - electrical activity of the heart
- Electro-oculography (EOG) - eye movements
- Electro-myography (EMG) - muscle activity
- Electro-encephalography (EEG) - electrical activity from the brain
- Blood Pressure - systolic and diastolic measurements and pulse
- Respiration rate - breathing inhalation and exhalation cycles.
- Nerve conduction - measure the speed at which an electrochemical impulse travels down a neural pathway.
- Reaction time - measure a persons reaction time in relation to a audio or visual stimulus.

Measuring Blood Pressure



5 - Omron RS6 Wristworn Blood Pressure Monitor

Omron Blood Pressure monitors can be used to take recordings of systolic, diastolic blood pressure and pulse readings.

- Measure blood pressure quickly using these wrist worn monitors
- Systolic and diastolic pressure readings
- Pulse readings
- Portable
- Suitable if you want to look at changes in the cardiovascular system
- Students have used these in the past to measure the impact of mindfulness activities on the cardiovascular system by taking measurements before and after undertaking mindfulness.

Driving Simulators



6 - Driving seat, steering wheel and pedals used with the simulator.

UWE has two driving simulators available to use for research projects. Each of which have a steering wheel, gears and pedals to simulate the driving experience.



7 - Example of a typical driving scenario that can be setup on the simulator.



8 - The simulators record reaction times, driving errors and speed exceedances.



9 - Scenarios can be developed to look at urban vs. rural driving settings.

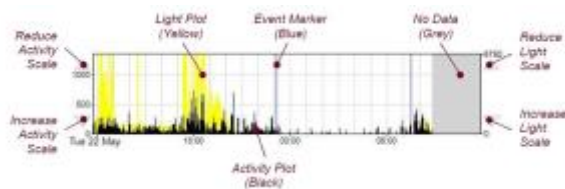
- Range of driving scenarios available to use.
- Measures divided attention.
- Driver mistakes e.g. speeding tickets, centre line crossings, collisions and road edge excursions.
- Performance data e.g. reaction time, correct responses, incorrect responses or no response.
- Caffeine studies.
- Alcohol studies.

Motionwatches



10 - Motionwatch MW8

- MotionWatch 8
- Wrist worn device measures intensity and duration of physical activity during the day and at night for estimating sleep quality



11 - Activity plot from Motionwatches.

The example output from the Motionwatch shows physical activity in black, the larger lines show more intense physical activity with time along the x axis. This equipment can be used to provide objective measurements of sleep for sleep deprivation research.

Smokerlysers & Alcolmeters



Measure levels of carbon monoxide from participants breath

12 - Smokerlyser

Smokerlysers can be used to measure levels of carbon monoxide in the breath, for example in smoking cessation research projects. Participants breathe into a tube attached to the front of the Smokerlyser and it provides a measurement of carbon monoxide from the breath.



Breathalyser measuring levels of alcohol from a breath sample

13 - Alcolmeter

Alcolmeter used to measure the level of alcohol by using a mouthpiece that participants breathe into. This equipment has been used in combination with the driving simulators to look at the impact of a hangover on driving performance.

Electroencephalography (EEG)

Brain Vision



14 - Brain Vision actiCHamp EEG system

64 Channel actiCHamp EEG system used to record the electrical signals from the scalp.



15 - EEG participant setup.

Example of EEG participant setup wearing the active actiCHamp electrode system.

[Electrical Geodesic Inc. System](#)



16 - EGI EEG system

Electrical Geodesic Inc. (EGI) system, this EEG setup uses 128 channels to record electrical activity during psychological experiments.



17 - EGI participant setup.

Example of a participant wearing a 128 channel net to record EEG using the EGI system.

Equipment: Sport and Exercise Psychology



18 - Life Fitness Treadmill

Life Fitness treadmill available for sport and exercise psychology projects.



19 - Life Fitness Exercise Bike

Life fitness exercise bike with onboard heart rate measurements, workout programs and varying resistance levels.



20 - Polar Fitness Watch

Fitness watches to record heart rate and physical activity when taking part in sports and exercise.

LearnPads



21 - LearnPad Tablet

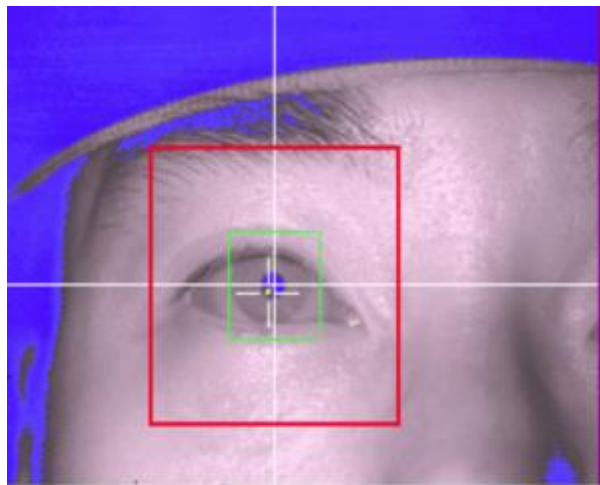
Handheld tablets used to conduct tests on memory, reaction time, attention and information processing. Reaction time and accuracy is recorded for each of the different tests that are available.

- Penscreen Standard Test Battery – multiple standard psychology tests available.
- Google Playstore apps e.g. mindfulness, colouring.
- Qualtrics – respond to questionnaire's.
- Portable testing/multiple testing.

Eyetracker: EyeLink 1000

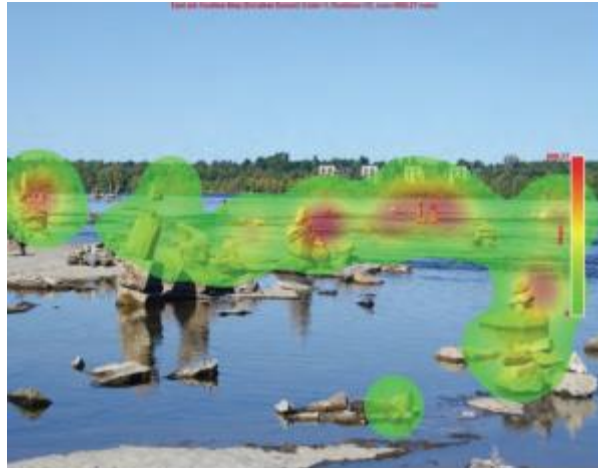


22 - This is a participant sat at the desktop version of an eye tracker. The camera is placed below the monitor and records the pupil diameter and corneal reflection in order to record what they are looking at on the computer screen.



Eye movements are recorded by tracking the pupil and corneal reflection.

23 - Example of the eye being tracked by the EyeLink 1000.



The eye tracking data is used to create heat maps to help visualise the data.

24 - Example of the output from the eyetracker, the heat map shows where the participant fixated, the darker red areas represent longer fixations.



25 - The image shows fixations from the data over time, helping to understand how visual scenes are processed.

- EyeLink 1000 Desktop Eye tracker
- Investigate eye movements to understand how visual information is responded to and processed.
- Sampling rate of 1000Hz - very accurate system.
- Can conduct experiments on reading, face processing, and visual illusions.
- Available for Level 3 research projects.

Gaming



26 - XBOX Kinect and games.



27 - Nintendo Wii and Balance Board.

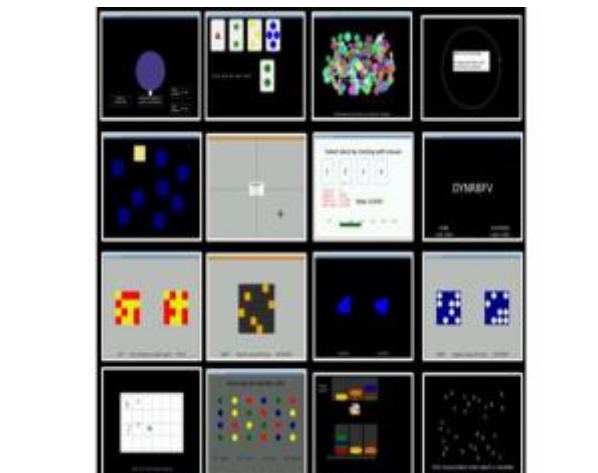
- XBOX 360 and Kinect sensor with a selection of games
- Nintendo Wii console plus balance board
- XBOX Kinect can also be setup as a skeletal tracking system

- Wii balance board can be used for measuring centre of pressure for investigating balance.

Software: Coglab, PEBL or design your own



28 - Coglab - Software suite containing classic psychology experiments.



29 - PEBL - Software suite containing classic psychology experiments.

We have many software programs available to measure various cognitive functions, including attention, working memory, language processing. We also have software available to design bespoke experiments for students to use.

Digital Voice Recorders



**DS-30
Digital Voice Recorder**



- Qualitative research projects - digital voice recorders available for recording interviews and focus groups
- Foot pedals for transcription of the recorded interviews and focus groups

Photography and video recording



30 - Panasonic V250 Video Camera

There is a range of photography equipment available for students to loan, including video cameras, digital SLR kits, still cameras and audio field recorders.

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