

Training Outline

Trainees/students will have the opportunity to learn how to measure psychophysiological measures of Electrodermal activity (EDA), specifically, skin conductance responses (SCRs). They will gain hands-on experience of how to collect EDA data and receive training on data analysis with some key advice for optimum EDA data collection, analysis and experimental design.

These documents contain quick start up information, data collection and tips, and a step-by-step analysis guideline. They have been used for training fellow academics/colleagues, L3 undergraduate students for their dissertation research projects, and for Masters students undergoing training placements in techniques in Cognitive Neuroscience.

The guidelines are comprised of:

- 1) Outline of documents (for trainers, supervisors, PI etc.)
- 2) Session 1 Introduction to SCRs
- 3) Session 2 Data collection
- 4) Session 3 Analysis guide

For training sessions, the following *schedule* is recommended:

Session 1. Introduction meeting (*approx. 1 hour*)

- discuss the research aims, experiment
- discuss goals for learning and expected outcomes
- outline sessions and structure of training
- if applicable – trainee takes part in a related experiment as a participant to gain initial hands-on knowledge of the procedure.

Session 2. Data collection (*approx. 2 hours*)

- Hands-on experience of experimental set up, applying electrodes and running the software.
- Mock / simple experiment, e.g. recording EDA and then present a stimulus (e.g. an image on screen – a negative/aversive stimulus usually works well).
- If students are in groups – have them practice data collection on each other
- If sole student – have them practice on the trainer
- After training, additional time in the lab should be set up for student to come in and collect their own data on this mock experiment (e.g. peers or through University recruitment system).
- Aim: is to have collected one or two (minimum) example signals to use in the next session to practice analysis.
- If additional testing is not possible, the trainer can provide an example signal or the student can analyse the signals from session 2 training.

Session 3. Data analysis (*approx. 2 hours*)

- Trainee/students should bring with them some example signals of collected data

(or the Trainer supplies them, as above).

- This is usually a particularly “content-heavy” session where students can feel overwhelmed – it is recommended to constantly remind students that it is a lot of information to take in at first, but with practice – it is relatively straightforward!
- It is recommended that this session 3 guideline is given to trainees/students before the session, for them to look over (again with the warning that it might seem complex)
- Trainer shows them AcqKnowledge interface and slowly walks them through all stages of the analysis.
- Take a break (*approx. 10 mins*)
- With the guideline open, students go through the procedure in their own time (depending on numbers/PC availability etc.)
- Trainer remains available, checking for problems, answering questions, checking each stage has been completed etc.
- Analysis can be performed on as many signals as required, students may check each other’s outputs (or work on the same signal to compare).
- Trainer should check the output and provide feedback.
- Finally, trainer should provide an overall summary of the training course and what students have learnt and completed, against their intended learning outcomes.

*The guides were written based on [Biopac](#) and [AcqKnowledge](#) software (versions 4). Specifically, using the following equipment: Biopac’s [MP150/MP160](#) unit and [MP36R](#) systems, [Disposable EL507A electrodes](#) (if ungelled, you can use [gel Isotonic gel 101](#)), and [SS57LA leads](#). So some differences may exist due to version changes etc. For more information on hardware and software, please refer to [Biopac](#) directly.

The guides have been created in conjunction with the following key resources:

- [Braithwaite et al., 2015 – A brief guide for analysing electrodermal activity \(EDA\) and skin conductance responses \(SCRs\) for psychological experiments.](#)

Further recommended reading:

- [Boucsein et al., \(2012\). Publication recommendations for electrodermal measurements. Psychophysiology, 49, 1017-1034.](#)
- [Boucsein, W \(2012\) Electrodermal activity \(2nd Ed\). New York: Springer.](#)
- [Critchley, H.D. \(2010\). Electrodermal Responses: What Happens in the Brain. The Neuroscientist, 8, 132-144.](#)