

Psychophysiology

and The Observer XT

Emotional responses of humans to their social and physical environment are the subject of many psychological and behavioral studies. How the social environment can affect a person's emotional response is studied, for example, in the interaction between parent and child or patient and doctor. The environment of a person could be a website, a smartphone, or some food items that need to be evaluated. Emotion theory suggests that physiological reactions underlie changes in overt emotional responses. Therefore, to get a more complete picture of the person's response it is useful to combine the measurement of behavioral and physiological data. This leaflet shows you how The Observer® XT can be used to integrate behavioral and physiological data.

COLLECT DATA

Behavioral studies are often recorded with one or more cameras. One camera, for example, records an overview of the test situation while another camera focuses on the test participant as a whole or on the face for analysis of facial, emotional expressions. Video recordings can be played back synchronously and simultaneously in The Observer XT, the software tool for data collection, analysis, and presentation of both observational and physiological data. Moreover, facial expressions can be analyzed in FaceReader™ and the results can be added to the observational data in The Observer XT. Using The Observer XT, you can also integrate your behavioral data with physiological data acquired with a Data-Acquisition system, such as the MindWare or BIOPAC system. Examples of commonly used physiological measures in behavioral studies are heart rate, respiration, skin temperature, and electrodermal activity.

Set up your test

Before you start your test, you first need to set up your cameras and the DAQ system. You can connect the DAQ system to The Observer XT computer to send a synchronization signal from The Observer XT to the DAQ system. This ensures automatic synchronization of the physiological data obtained on the DAQ system with the video data and the behavioral data in The Observer XT.

Design a coding scheme

With The Observer XT, you can specify subjects (e.g., patient, doctor), behaviors (e.g. body posture, type of verbal communication, putting food item in the mouth), other events (e.g. new phase in the test, participant is instructed to inspect food item), and modifiers in a coding scheme before or during observing. Modifiers describe additional features of behavior, such as 'ingesting carrot' vs. 'ingesting broccoli'.

Code behaviors

You can already code behaviors or events during a test and carry out more detailed logging afterwards based on the recorded videos. You can code by means of key strokes. Facial expressions can be automatically analyzed with FaceReader and can be imported into an observation in The Observer XT.

Video

The Observer XT facilitates coding from video. You can play two or more videos simultaneously forward or backward and also both at slow and fast speeds. This allows you to fast-forward to a particular point of interest in the video and carry out very detailed logging.

Physiology data

Physiological data is obtained by dedicated software on the DAQ system. For this purpose, sensors or electrodes are placed on the test participant to measure the physiological responses. The sensors are connected with leads



to the DAQ system and the data is acquired by the software. After the test, the raw physiological data signal can be imported into The Observer XT. Sometimes the physiological signal needs to be pre-analyzed in the DAQ software to get higher-level measures. For example, based on the ECG you can calculate the heart rate (HR) and/or variability as interbeat-intervals (IBI's). HR and IBI's then are imported into The Observer XT. Another example is electrodermal activity (EDA) which is often pre-analyzed to detect the significant peaks in the raw signal as an expression of an emotional response to a specific stimulus or event. These EDA peaks and their levels can be imported into The Observer XT as events and numerical modifiers.



Carrying out a test

When you start a test in The Observer XT, you can use the synchronization signal that is sent out to the DAQ system to simultaneously start that system too. Simultaneously, the videos are recorded and maybe already some live coding is carried out. Once a test is done, the videos are linked to the corresponding observation in The Observer XT. The physiological data can be imported into The Observer XT; when you do this, the synchronization signal is used to automatically synchronize the behavioral data and the imported physiological data. Optionally, you can pre-analyze the physiological signal and import the new physiological data into The Observer XT.

SELECT AND ANALYZE DATA

After coding your observations and importing physiological data, you can start to investigate your results and the relationship between behavioral and physiological data.

Visualize data

The Observer XT provides detailed visualizations with the behavioral and physiological data plotted in one window.

This helps you to explore the data. Furthermore, customized charts and statistics are accessible in a few mouse clicks.

Select data

Based on events you scored, you can create custom intervals with which can analyze both the behavioral and physiological data. For example, you want to calculate the mean skin temperature when the test participant eats a food item which they dislike. It is also possible to select the parts of your data when, for instance, the heart rate was higher than 100 beats per minute.

Export data

For additional calculations and analysis, The Observer XT can export behavioral and physiological data to a spreadsheet or statistics program of your choice or to DVD for backup. A wide range of presentation options is offered as well, to facilitate communicating your results. You can select important video fragments and create your own highlights video clip to illustrate your outcomes.

Feel free to contact us or one of our local representatives for more references, client lists, or more detailed information about The Observer XT, FaceReader, the MindWare, or BIOPAC system.

