

# Aggression, stress and psychophysiological predictors

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# Objectives

- The **reliability and validity** of new wearable bio-sensor technology. *The main question is to what extent wearable physiological measures are comparable to State-of-the-Art physiological measurements in the lab?*
- **24- hour wearable monitoring** of physiological processes “in the wild”. *The main question is to what extent real-time information from the body has added value to existing behavioral and self-report measures?*
- **Possible research designs** to maximize the implementation for the end user. *The main question is how to decide on the proper design of user interfaces and physiological parameter analysis to reduce risks, inefficiency, and suffering in the end user.*



# Method

## *Project 1 Clients*



- Forensic Psychiatry
- 5 day monitoring aggression
- E4
- PCL-R
- N=125
- Hypothesis:  
Different psychophysiological trajectories



# Method

*Project 2 Support staff*

- ◉ 2 years
- ◉ 4 half yearly intervals
- ◉ E4
- ◉ Association between:
- ◉ Emotional intelligence
- ◉ Personality
- ◉ JRS
- ◉ Aggression
- ◉ Burnout

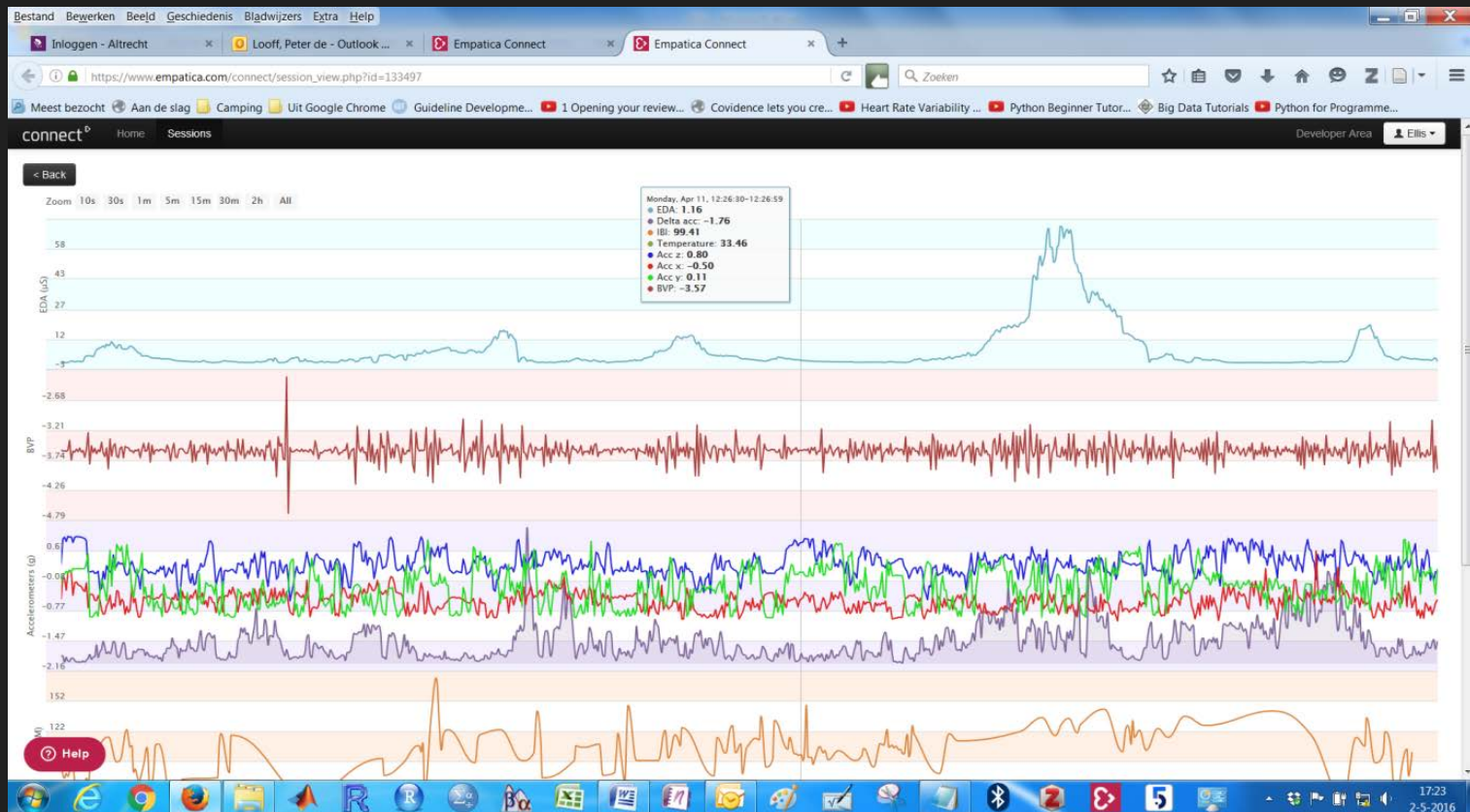


# Reliability and validity



- Main interest:  
Practical use
- Not so interested in  
validity
- >25 devices
- EDA >25
- HR 1
- Temperature 2
- Last time: How do  
you know the E4 is  
working?

# Problem: Decline in the signal 11-4-16



# Decline 13-4-16





# Decline 20-4-16

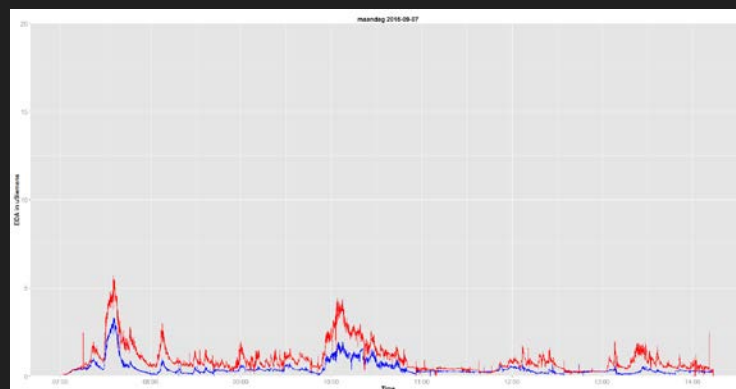
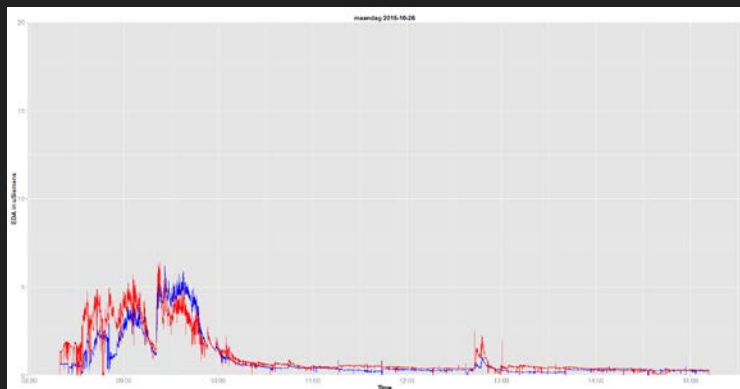


# Decline 28-4-16



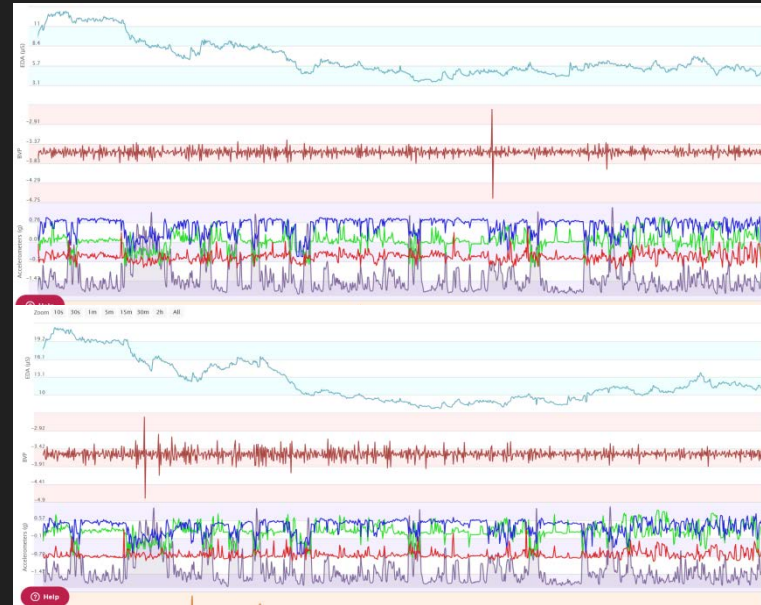
Hovering over 0 uSiemens  
Advice Empatica: Clean it.  
Educate projectleaders on the signal  
This will influence results

# Same subject, left, right in one graph



Non-dominant hand in our study  
Some wear the E4 on 2 hands  
Negative emotional processing might  
responsible for the difference

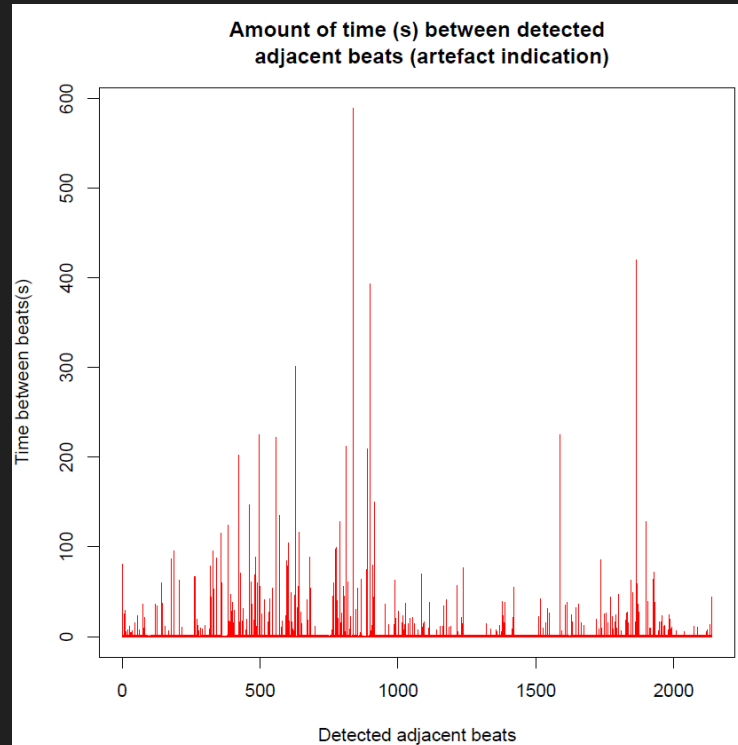
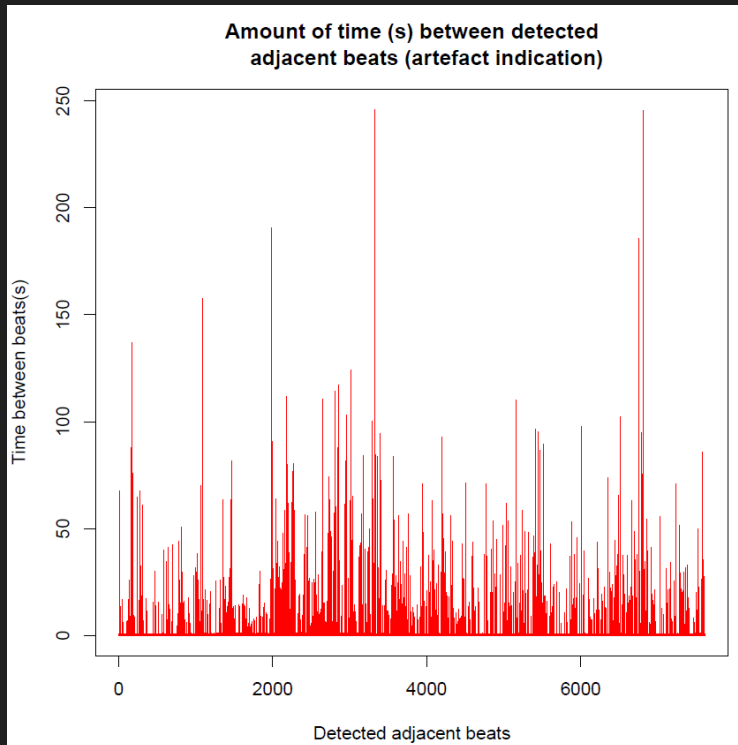
Figure 1 displays three panels of time-series plots, likely representing seismic or environmental data. The top panel shows 'RMS dB' (blue line) and 'Acceleration g' (multiple colored lines) over time (2000 to 2500 seconds). The middle panel shows 'RMS dB' (blue line) and 'Acceleration g' (multiple colored lines) over time (2000 to 2500 seconds), with a legend box indicating 'Recording: Aug 15, 11:50:13.113 EDT 2011' and 'Station: 100.000'. The bottom panel shows 'RMS dB' (blue line) and 'Acceleration g' (multiple colored lines) over time (2000 to 2500 seconds).



5 watches, 2 arms  
Height is different  
Position matters



# Last example on HR(V)



Difference in time between beats.  
Influence on HRV analysis  
Movement coorection in batch tool