



# Analysis and Visualization of Longitudinal Physiological Data of Children with ASD

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## Motivation

Individuals with ASD almost always suffer stress and anxiety, but cannot always communicate it.

*Can we monitor their inner responses during daily life activity and for long periods of time?*

**Goal:** Test feasibility of longitudinal study in classroom settings using state-of-the-art biosensors to monitor physiological responses of children with ASD.

## Data Collection

5 minimally verbal children (9-20 years old)  
 Non-profit school for people with ASD  
 Two-month study

**Physiology** + **Context**



**Affectiva Q™ sensor** Electrodermal Activity  
 3-axis accelerometer  
 Skin temperature

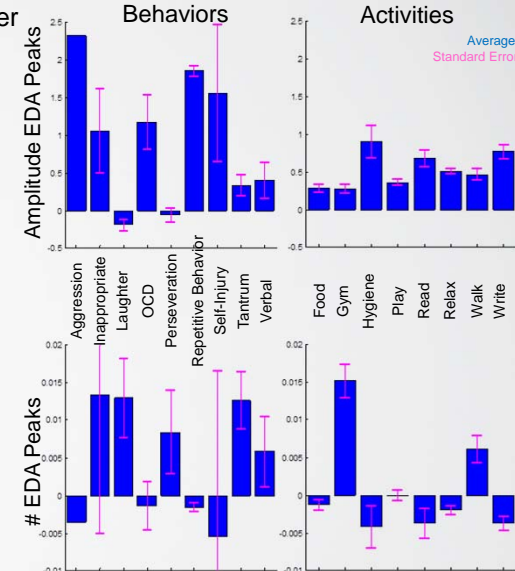
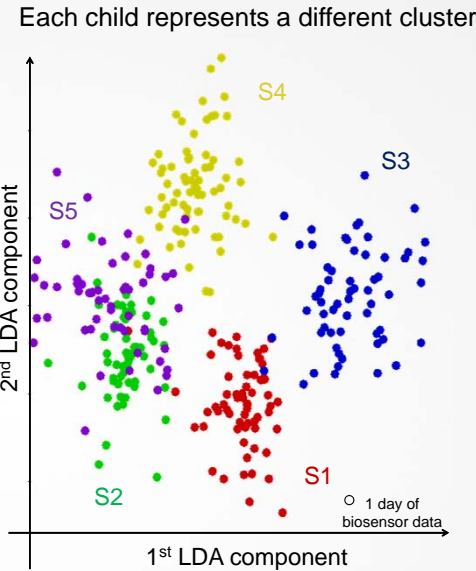
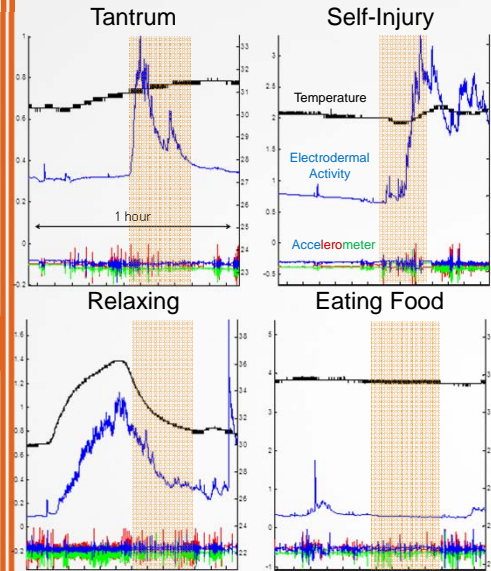
**Teachers' Annotations**  
*Activities:* food, gym, play, reading, walking...  
*Behaviors:* aggression, self-injury, tantrums,...

> 1400 hours data  
 91% artifact free

> 6000 annotations

Good Data	S1	S2	S3	S4	S5
# days	64	62	61	70	55
Avg. time/day (hours)	4.55	4.26	4.49	4.23	3.64
Total time (hours)	291	264.1	274	296	200.5

## Exploratory Analysis

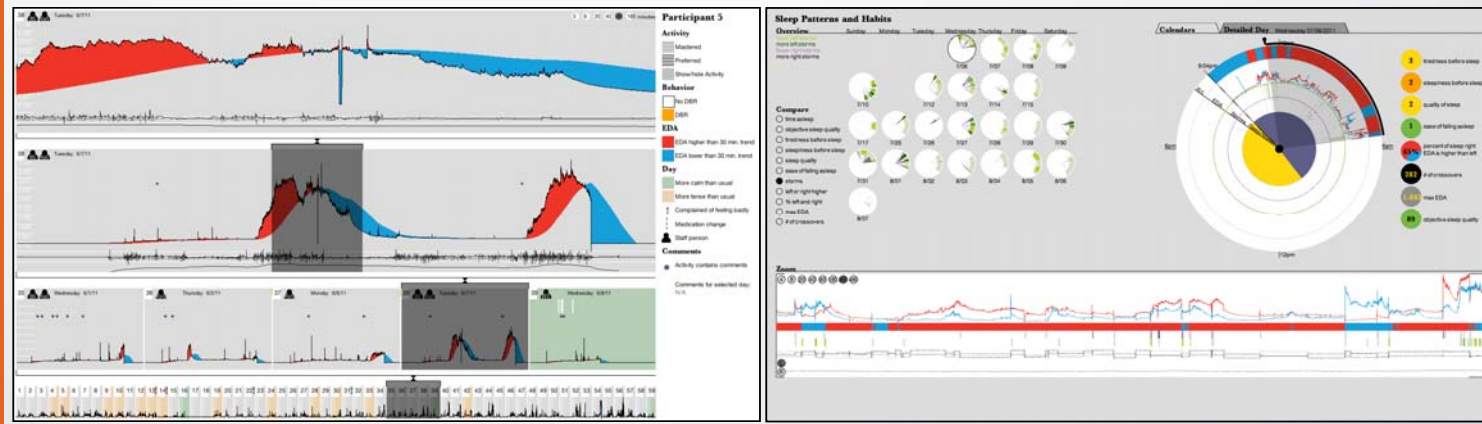


## Data Visualization Tools

Physiological data + context

Multiple time granularities (day, week, month)

Feature computation & visualization



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