

# Recording EEG from Children



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**ECR EEG WORKSHOP 2013**

# My Background



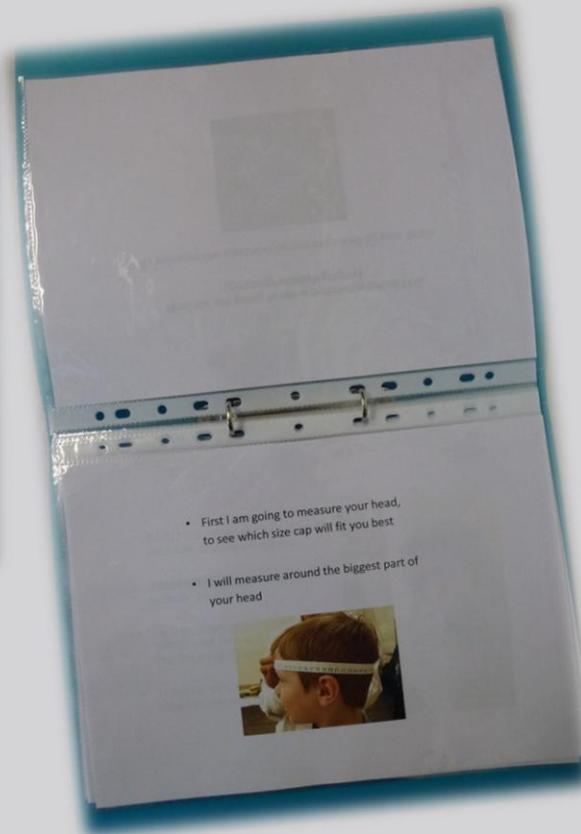
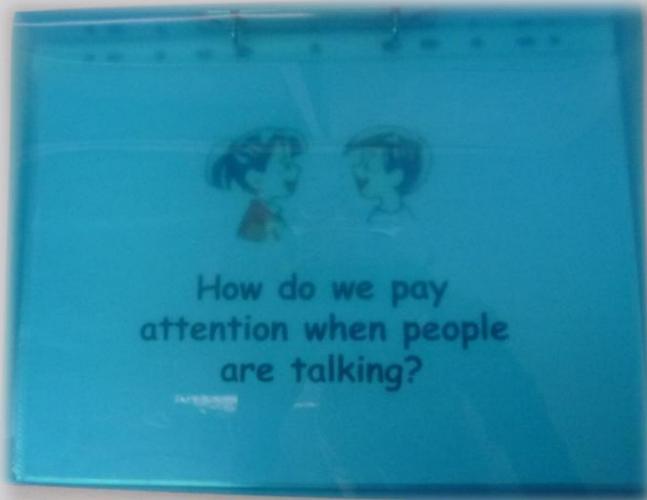
- EEG with adults
- Behavioural experiments with children.
- EEG experiments with children aged 7-16.



# Step 1: When participants arrive at the lab



- Booklet for children



# Step 1: When participants arrive at the lab



- **Common worries:**
  - Having gel in their hair.
  - The syringe looks a little bit like like an injection needle.
  - The EOGs might hurt when taken off at the end.
- **However, most who have agreed to come to the lab don't have any real worries about EEG.**

## Step 2: Setting up the cap



- **Might have to sacrifice low impedances for 2 reasons:**
  - Don't want to press too hard and make it uncomfortable for them.
  - Often your time is limited, so you often don't have long to spend setting up – you don't want to sacrifice too much time when they could be doing the task!



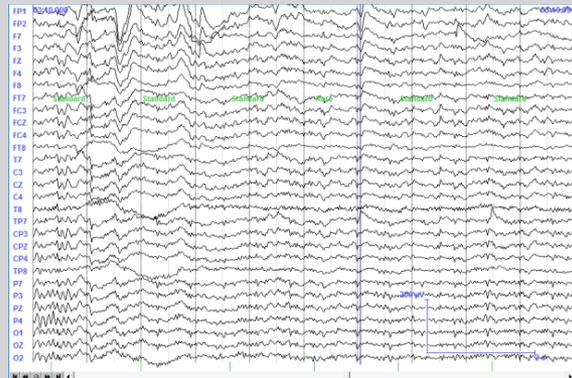
## Step 2: Setting up the cap



- When you put on a DVD to watch, they don't seem to care what you're doing!



- They enjoy seeing their brain activity on the screen.



## Step 3: Experimental task



- Have to emphasise when they are allowed to blink and when they should try not to blink.
- You can watch the recording and remind them to try not to blink.

## Step 3: Experimental task



- If the chair is too high, you will probably find they fidget more and swing their legs during the task – not desirable!



# Step 4: Experimental task



- **Lots of breaks!**
  - I normally have a short (~30 second) break every 16 trials (show them a video) in addition to longer breaks.
  - This lets them rest their eyes and helps to minimise blinking during the trials, but doesn't add a lot of extra time to the experiment.



# Incentives



- Sticker after each block of trials, “only if you do well”.
- Certificate at the end of the experiment.
- Payment.

# Dealing with the data



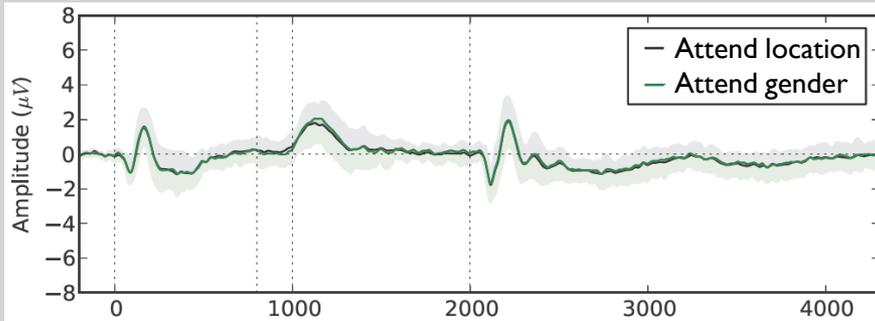
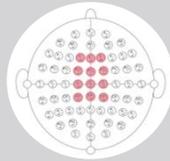
- Your data will probably be more noisy than adult data for at least 3 reasons:
  1. There might be more artefacts in the data
  2. We often exclude incorrect trials for ERP analysis - there may be more incorrect trials in your child data than equivalent adult data.
  3. You will probably have a low number of trials, due to time restrictions and extra breaks.
- Consequences:
  - Excluding trials with artefacts will not leave you with many trials at all!
  - You may need more participants than in an equivalent study with adults.

# Some real data

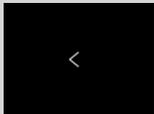


- Data from children and adults compared.

**ADULTS**  
n = 16



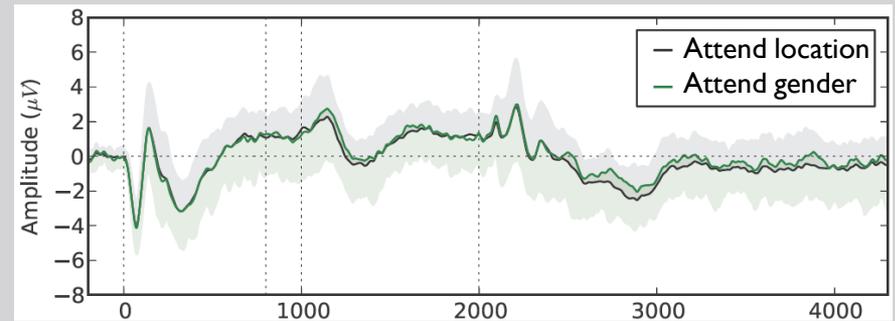
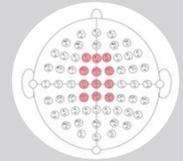
Baseline  
↑  
Visual Onset  
↑  
Decrease in luminance  
↑  
Auditory Onset



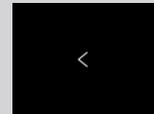
“Ready Baron, go to green three now”

“Ready Laker, go to white one now”

**CHILDREN**  
n = 24



Baseline  
↑  
Visual Onset  
↑  
Decrease in luminance  
↑  
Auditory Onset



“Ready Baron, go to green three now”

“Ready Laker, go to white one now”

# Conclusions



- Recording EEG data from children (or any non-student population) has additional challenges.
- However, it can be done!
- Once you know the challenges, they're relatively easy to manage.

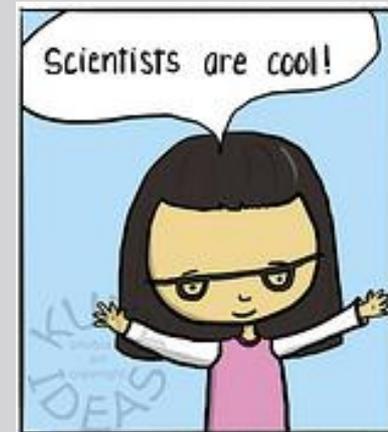
# Conclusions



Hopefully the child won't end up looking like this by the end...



...but more like this!



**Thank you for listening**