

Recording EEG from Children



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ECR EEG WORKSHOP 2013

My Background

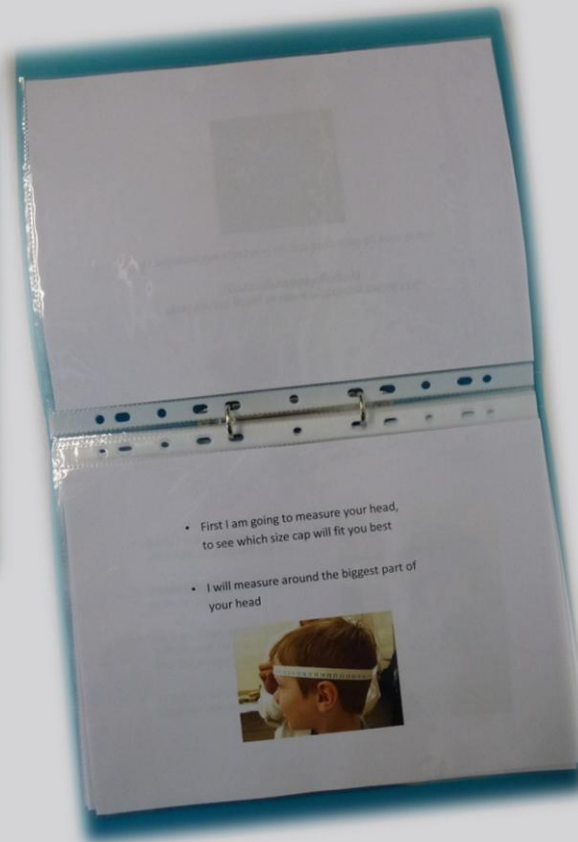
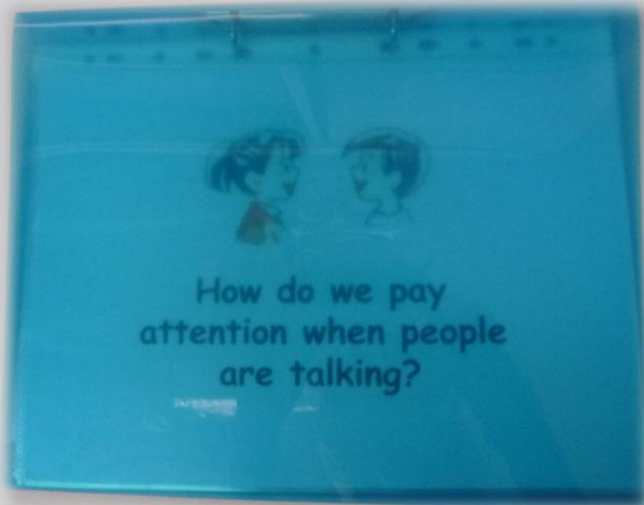


- EEG with adults
- Behavioural experiments with children.
- EEG experiments with children aged 7-16.

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!



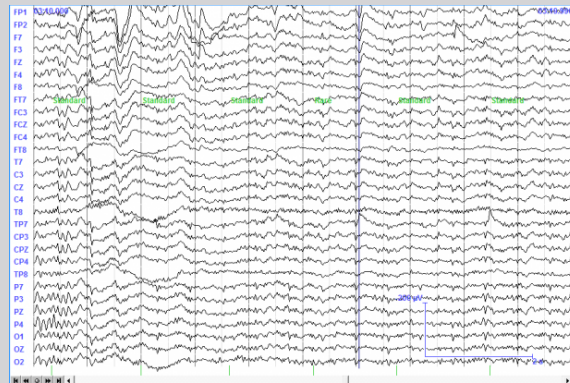
Step 2: Setting up the cap



- 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



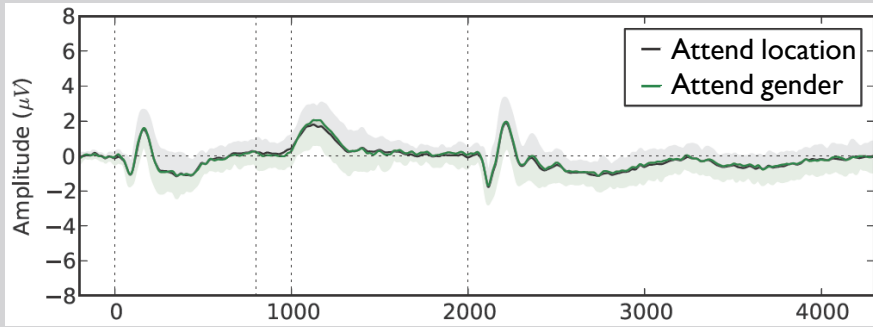
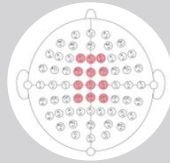
- Your data will probably be more noisy than adult data for at least 3 reasons:
 1. There might be more artefacts in the data
 2. We often exclude incorrect trials for ERP analysis - there may be more incorrect trials in your child data than equivalent adult data.
 3. You will probably have a low number 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



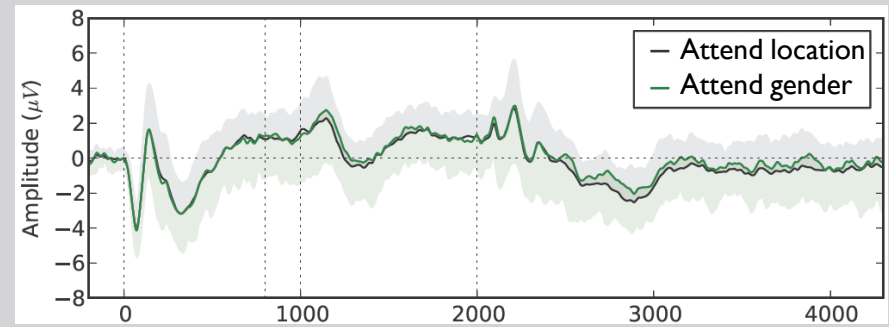
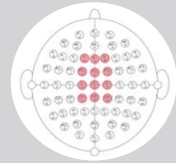
Baseline
↑
Visual Onset
↑
Decrease in luminance
↑
Auditory Onset



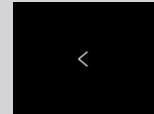
“Ready Baron, go to green three now”

“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.

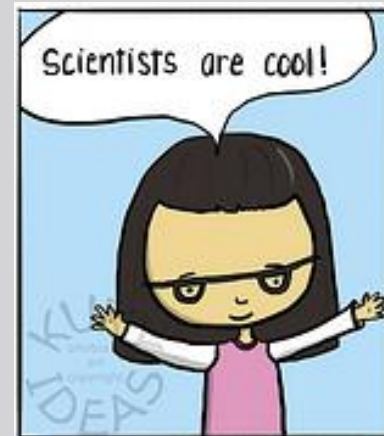
Conclusions



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



...but more like this!



Thank you for listening