

ERP Handout for Parents

What is the study about?

This part of the BRAIN study will look at how a child's brain responds to sounds of varying loudness. Sometimes children who have been diagnosed with autism spectrum disorder (ASD) seem to respond less to some sounds and at other times appear very sensitive to noise. We hope to learn more about how children take in and process sounds from their environment. This handout will help you understand the how we measure brain electrical responses elicited by sounds (Event-Related Potentials, known as ERPs), and what to expect from this visit.

How do ERPs work?

ERPs are the electrical response made by the brain as it processes information from the specific events in the external environment. ERPs can be measured in a safe, completely *non-invasive* way using brain wave recordings, known as electroencephalography (EEG), a procedure that measures electrical activity of the brain through the skull and scalp. To do this, we use a stretchy, snug cap that has sensors attached to it. In the center of each sensor, we put a small amount of saline-based, non-irritating gel to ensure we get a good electrical signal from your child's scalp at each location around the head. There is no danger or pain involved with recording electrical activity from the brain in this way. We will measure the very subtle, and always present, electrical signals (brain waves) from your child's scalp. No electricity will be going to your child.

What to expect

You and your child will make one visit to the UC Davis Center for Mind and Brain (CMB). Directions are on the last page of this handout. When you arrive, you will be greeted by an experienced member of our team, who will take you through each part of the testing. The process has been set up to be as friendly as possible for you and your child. We'll first get acquainted, talk about videos your child might like to watch during the capping process and ERP data collection, and decide what snacks, drinks, and other goodies we want on hand during the session.

Step 1—Fitting the ERP cap:

- While the cap is being fitted (we will take a few measurements of your child's head to be sure to choose a cap of the right size), your child will be able to play with toys or watch a video.
- The cap is very stretchy and soft on the inside. It looks something like a cloth bathing cap with very thin lifesavers on it. These "lifesavers" are sensors that are sewn onto the cap, that when fitted on the head rest gently against the scalp.
- The cap is held in place with 2 chin straps and an elastic belt, which is fitted around the chest with velcro.
- The last steps in fitting the cap is moving the hair under each sensor to the side with an alcohol solution. We then squirt a small amount saline gel in each of the sensors and use soft, long cotton swabs to make sure the gel is touching your child's scalp. This will be done as discreetly as possible while your child is still playing or watching a video.



- Fitting the cap will take about 20-30 minutes.

Step 2—Preparing for ERP collection

- After the cap is fitted, you and your child will walk across the hall to our soundproof testing room.
- This room is dimly lit and the video we chose will be playing when your child enters.
- We have a comfortable "La-Z-Boy" type chair in the booth. Your child will sit on your lap throughout the session.
- We will spend about 10-15 minutes making sure that we are getting good contact from the sensors. During that time your child will either be watching a video on the screen



directly in front of him or her or playing with a toy with one of our experimenters. They may also have a snack or drink at this time. We will use a soft, long cotton swab in some of the sensor sites to adjust the contact with the scalp.

Step 3—ERP recording

- When we're ready to begin, we will place some lightweight headphones on your child. Through the headphones, about every 1-2 seconds we will play a single very short sound made up of several tones. These sounds vary in loudness, but none of them are extremely loud.
- During the time that the sounds play (about 40 minutes), we will try to engage your child in a fun activity, like watching a video or playing with a quiet toy.
- It is during this time that we are actually recording brainwaves, although your child will not have to make any behavioral response to the sounds.
- It is important that your child remain somewhat still and quiet during this time in order for us to record good information. If your child moves too much, the information we get will be hard to read. If your child needs to shift position, starts to speak, or needs a break for some other reason, we can pause recording and begin again when he or she is ready.
- An assistant will always be in the room with you. An experimenter will also watch the session using a video monitor in the next room.



After the Recording:

- When the recording phase is over, the cap will be removed by the experimenter and we will clean the gel out of your child's hair.
- We have a salon-style sink available for shampooing your child's hair after the testing session, if you wish.
- For helping us, your child will be given a small thank you gift.

What should I bring with my child to the ERP session?

Toys/Videos:

We have a Netflix subscription that we can use to play entertaining videos for your child. We also have age-appropriate toys. We do ask, however, that if your child has very specific likes with regard to toys, books, etc., that you bring them with you on the day of the ERP session. If your child has a favorite DVD that he or she really loves to watch (*especially if there is only one that he or she will watch*), please bring a copy of it with you to the ERP session.

Snacks:

We will have snacks on hand, but if your child has special dietary restrictions or favorite snacks, we ask that you bring them with you.

Please contact Dr. Susan Rivera at 530-747-3802 if you have any questions or concerns regarding the ERP procedure.

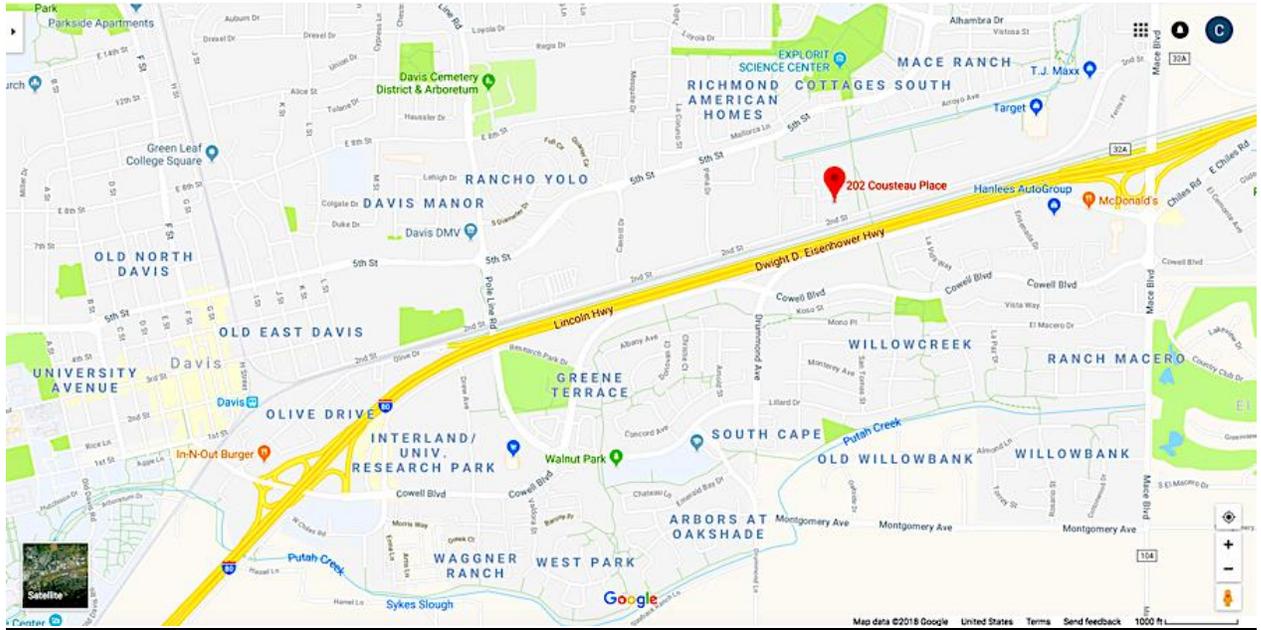
Before the day of ERP appointment, if you need to cancel or change, please call.

On the day of the ERP appointment, if you need to cancel, confirm, or let us know that you're running late, please call ERP lab: (530) 297-4693.

Directions to the Center for Mind and Brain (CMB):

202 Cousteau Pl., 2nd floor
Davis, CA 95616

When you get to the 2nd floor, please call (530) 297-4693 for entry to ERP lab.



From Downtown Davis

1. Turn right (East) on 5th Street (Russell Blvd.) and go roughly 1.5 miles (past new Police station) to traffic light at Pena.
2. Turn RIGHT on Pena and go to 2nd Street (where Pena dead ends).
3. Turn LEFT on 2nd Street and go one block to Cousteau Place.
4. Turn LEFT on Cousteau Place.
(see #5, below)

From I-80 (either from Sacramento or San Francisco)

1. Exit Mace Blvd. north (that is a right turn off highway from Sacramento, and successive lefts off highway from San Francisco).
2. Go one block to light at 2nd Street.
3. Turn LEFT on 2nd Street and go on mile to Cousteau Place (just past pedestrian freeway overpass).
4. Turn RIGHT on Cousteau Place.
5. Go to end of cul de sac and turn RIGHT. The CMB annex is in the same 2-story building as PG&E Customer Service Center. Their signs are salient. NO UCD signs are in place yet.
Park anywhere in the lot. Enter via the main entrance, and take the elevators to the second floor. Turn right out of the elevators and see the CMB annex.

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