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Who are we?

We are Dr Áine Ní Choisdealbha (Research Fellow) and Dr Nuala Brady (Associate Professor) of the School of Psychology at University College Dublin. We are working on an EU-funded project about how babies develop new motor skills, and how learning these skills helps their social development. We are interested in what happens in the brain to support motor and social development. This study is called "Infant brain responses to other people and their actions".

What is this research about?

Infancy is a period of great change, as babies must learn how to use their hands and other parts of their bodies to move around, and hold, play with or otherwise use objects. They learn by doing, but also by watching other people. We know that babies can learn quickly to predict what people will do. For example, if you pick up a hairbrush, they can usually predict that you'll brush your hair. They probably learn this from having seen you do the same thing a few times before. However, there is also some research showing that as babies get better at doing things themselves (e.g. picking up toys, or drinking from their own cup), they also get better at predicting what other people will do.

We also know that many of the parts of the brain that are involved in doing actions, are also active when we watch other people do the same things. In this study, we'd like to see how the baby brain responds to people doing actions with different parts of the body (e.g. reaching with the arm, kicking with the leg), and how this might differ for babies at different stages of development, and babies with different motor skills.

Why are we doing this research? Why have you been invited to take part?

We are doing this research because it will help us to understand a bit more about babies' development, particularly about their social development, like how they begin to relate to other people. Babies can't tell us about their experiences directly. Indirect measures, including brain recordings, give us some insight into what they are seeing or doing.

If you are the parent or guardian of a child between the ages of 4 and 6 months, 8 and 10 months, or 12 and 14 months, we would like to invite you and your baby to take part. If you are interested in taking part a second time or third time, and your baby is not yet 12 to 14 months, we may invite you back to take part again if you are interested in doing so. If we have multiple measurements from the same baby, that can help us understand even better how brain responses change with development. You do not need to agree to return for another session in order to take part today.

How will your data be used?

We use EEG (electroencephalography) to learn how babies understand the actions in the videos we show them. With this method, we put a special cap containing sensors on your baby's head. These sensors record "brain waves". Everybody's brain generates little electrical pulses all the time, and these sensors passively record those pulses. By recording these little pulses while your baby watches some videos, we can look for changes in their brain waves as they watch the different actions. We will also present your baby with toys to reach for or kick, so we can identify the areas of their brain that are active when they do these actions themselves.

We will also ask you to provide your infant's date of birth on a separate sheet which we will destroy once we have used the information to calculate your child's age in days. We need this information because babies learn new things, grow, and develop quickly, so it is important to know exactly how old they were when we collected the data.

We will ask you to fill in a standardised questionnaire about your baby's motor skills. This questionnaire is for research purposes only, it cannot be used to identify any developmental issues or delays.

What will happen if you decide to take part in this research study?

If you decide to take part, we will ask you to visit us in our "Baby Lab", and spend approximately one hour with us. When you arrive, we will present you with this information sheet, and ask you to fill in a consent form. We will ask you to stay with your child throughout your visit.

We will measure your baby's head to make sure we use a comfortably fitting EEG cap. We will soak the cap in a gentle saltwater solution for a few minutes (this helps the sensors to pick up the brain waves better). As we wait, we will ask you to fill in the questionnaire about your baby's development. Once the cap is ready, we will put it on, giving your baby a few minutes to get used to the new sensation of the cap on their head. During this time we will record some video so we know where the sensors sat on your baby's head. We will then have you and your baby sit in front of the screen in our EEG room. They may sit on your lap, or in an infant chair with you nearby. We will spend a few minutes checking the EEG sensors to make sure we are getting a good recording, and then we will show your baby some videos of people doing actions with toys (e.g. reaching for and picking them up, kicking them) for up to 20 minutes, or until they become bored, tired or upset. We will then present them with toys for them to reach for with their hands or feet.

We will also record a video of your baby as they watch the screen. This is important as it allows us to see what is happening during the recording when we check the EEG results later (e.g. was the baby wriggling or moving around a lot, were they looking at the screen).

How will your privacy be protected?

The consent form that you sign will be kept in a locked filing cabinet. The questionnaire will also be stored in a locked cabinet. The data we collect from your infant (EEG, video) will be stored securely on password-protected computers and moved, if necessary, on encrypted storage drives. Your name and your infant's name will not be stored with the data we collect. We may retain your contact details to invite you back for another recording in future, if you would like to return. In this case, your contact details will be stored securely in an encrypted file, and not directly

linked to the data we collect from your infant today. The EEG, video, and questionnaire data will be kept indefinitely unless you request its destruction.

In modern science, it is considered good practice to share data, and many outlets for scientific articles require authors to share their data openly. In this study, the EEG and questionnaire data can be shared anonymously, with no link to your child's identity. Researchers at other institutions may also request to view the videos of the data collection session, to match to the EEG brain data. It is not possible to anonymise the video data, as your child's face will be visible. In addition to asking for your consent to take part in the study today, we will separately ask for your consent to share the data, with or without the videos. You do not need to consent to data sharing to take part in the study. We will not share the data until the study is complete. Once the data is shared, we can delete it on our end but we cannot guarantee that it will be completely destroyed as other copies may have been made.

What are the benefits of taking part in this research study?

There are no direct benefits to you or your infant to taking part. However your taking part in this study will help us to understand how infants learn, and how they develop in the social and motor domains.

What are the risks of taking part in this research study?

There are no risks to taking part in this research. We will treat your data securely and with respect in accordance with UCD policies and with GDPR. In the unlikely event of a data breach, we will report the problem immediately and follow UCD policy and GDPR rules. We work in accordance with the UCD Child Safeguarding Statement which you can view here:

[UCD Child Safeguarding Statement](#)

Many infants show a slight negative reaction to having the EEG cap placed on their head, much like they might react to a hat. The majority get used to having the EEG cap on their heads, but a small percentage of infants do not, and do not like it. If your baby does not like the experience and does not get used to it, we will remove the EEG cap.

The EEG equipment we use is CE marked. This means it complies with all the EU requirements for health and safety.

Can you change your mind at any stage and withdraw from the study?

Yes. If you want to stop the recording at any time, tell us and we will stop immediately. You can withdraw fully at any time and request for us to delete all of the data we hold that we collected from you and your infant. We will delete all videos and EEG data we collected. We will also destroy the questionnaire and any other personal information (e.g. the consent form). If the EEG, questionnaire, or video data have been shared with other researchers, its destruction will not be possible. This sharing will not take place until the study has been completed and all data has been analysed.

If you request the deletion of your data after we have analysed it and shared the results, we will delete all of the data above but will not be able to delete this analysed or "processed" data. This sort of data will not be identifiable - essentially it will be a row of numbers in a spreadsheet with data from other infants as well. Your infant will not be identifiable in any way; in the data infants will be represented by a mix of letters and numbers (e.g. xy12ab34).

How will you find out what happens with this project?

Please visit <https://www.ucdperceptionmotorcog.com/> to keep up to date with our work. If you consent by filling in the relevant box on the consent form, we will keep your email address on file and email you with a written report on the project results when it concludes.

What if I am worried about my child's development and progress?

The research we are doing is not clinical in nature. The Early Motor Questionnaire is a research questionnaire and is not considered appropriate for any sort of diagnosis; likewise the other tests we will run are all for research purposes and have no clinical value. We are scientists, so we are not qualified to give any sort of clinical advice or detect any kind of developmental issue.

Babies have a lot of new things to learn so it is not surprising that they all develop at different rates, and learn to do different things - reaching, babbling, walking, talking -

at different times. If, however, you are concerned that your child's development may be delayed, you can speak to your GP or Public Health Nurse. You can find information about developmental milestones on the HSE website:

<https://www2.hse.ie/babies-children/checks-milestones/>

Contact details:

If you have any further questions, you can contact:

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