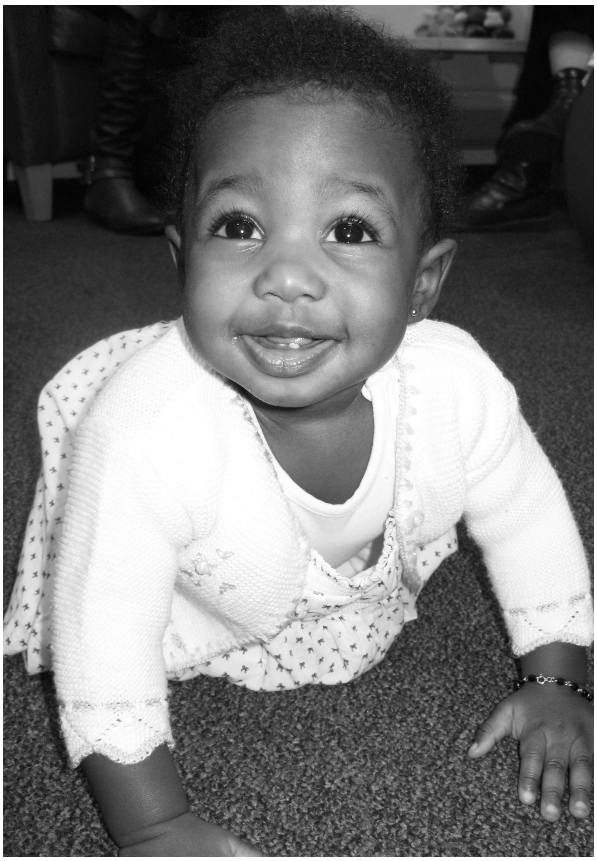
Birkbeck Babylab NEWSLETTER 2012

Centre for Brain and Cognitive Development



Thank you to our funders:

Autism Speaks | Autistica | Autour des Williams | The Baily Thomas Charitable Fund | The Big Give | British Academy | Charles Wolfson Charitable Trust |The David and Elaine | Potter Foundation | Economic and Social Research Council | European Commission | The Garfield Weston Foundation | The Great British Sasakawa Foundation | The Henry Smith Charity | ICAP Charity Day | Kirby Laing Foundation | Leverhulme Trust | The Mason le Page Charitable Trust | Medical Research Council | Nuffield Foundation | Rolfe Charitable Trust | Simons Foundation | The Sylvia Waddilove Foundation UK | The Waterloo Foundation | University of London Central Research Fund | Wellcome Trust | Williams Syndrome Foundation |

And a BIG thank you to all the families that have taken part in our studies

@BirkbeckBabylab

Our good news

2012 as been quite an eventful year for the Birkbeck Babylab. Our new PhD students, whom you've met in our last publication, have started their new studies and we have expanded our lab to another building just down the road.

We have now another welcoming reception and a further eye-tracking room at 32 Torrington Square where we also carry out our studies.

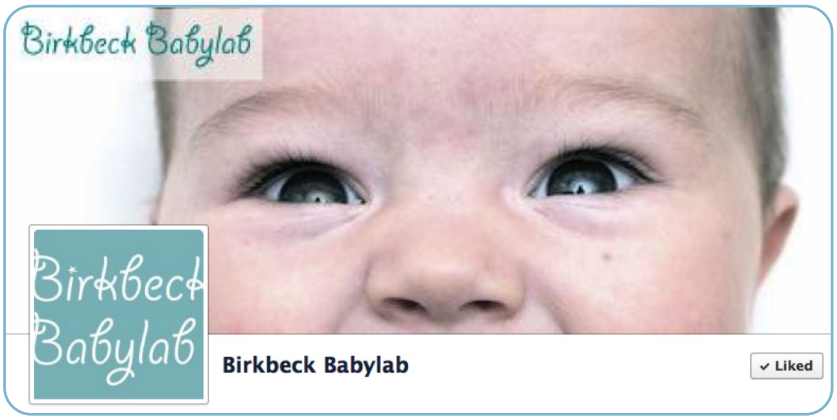
With this increase in activity, there has also been increased interest in our studies from the media. Here are some examples of the Babylab press and television coverage:

*27-01-12: A BBC 6 o'clock news report on our paper exploring the early signs of Autism. www.bbk.ac.uk/news/earlier-signs-of-autism-detected

*30-04-12: One of our researchers, Dr Tim Smith, was on the BBC One Show talking about 3D perception. www.bbc.co.uk/iplayer/episode/b01h5hcc/hd/The_One_Show_30_04_2012

*15-08-12: BBC4's series on Growing Children showed a great piece on Autism, featuring our very own Birkbeck Babylab. www.bbc.co.uk/iplayer/episode/b01lyczl/Growing_Children_Autism

*The Baby Laughter Project features in several publications, such as Scientific American (25-09-12) and the Independent (25-10-12)



Rudy, now, age 6 years old, and when he was 6 months - image circled on the board.

Follow us on Facebook and twitter @BirkbeckBabylab to keep up-to-date with our news

The Baby Laughter Project

By Caspar Addyman

At the babylab we are interested in what babies' laughter can tell us about their development. We believe that they laugh and smile to bond with their loved ones and when they are surprised by some new knowledge about the world. For example, a dog that goes 'miaow' is hilarious only once you know that dogs aren't supposed to do that.

Our main question at the moment is "what makes your baby laugh?" Is it a sound? Is it a funny face? Is it a unexpected event? We anticipate that certain things will be funnier at different point in their development. Our aim is to have comprehensive account of what makes babies laugh at what age, and hopefully later on have more lab based studies where we can see which parts of the brain are involved in the expression of laughter throughout the babies development.

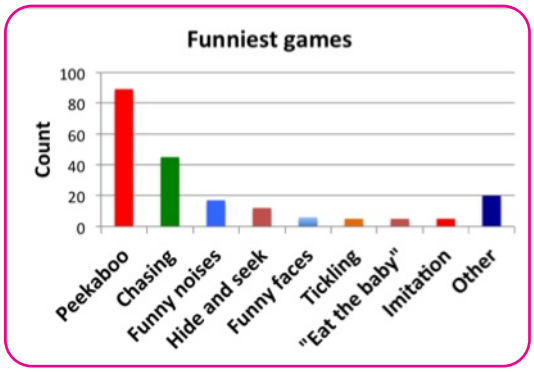
So for now we are running the world's first ever online survey of baby laughter.

If your baby is under 2 and a half, please take our laughter survey at http://babylaughter.net/survey

You can also send us your videos of your baby laughing to http://babylaughter.net/videos

Some early results:

We've had 300 responses from 22 different countries. So far we've found a surprisingly wide range of ages for babies first laughs. We're happy to report that mummy and daddy seem to be equally funny. Peekaboo is by far the most popular game for making babies laugh. Most encouragingly, we've found that, as with adults, babies' laughter is a very important part of social bonding. As Victor Borge said: *"Laughter is the shortest distance between two people."*

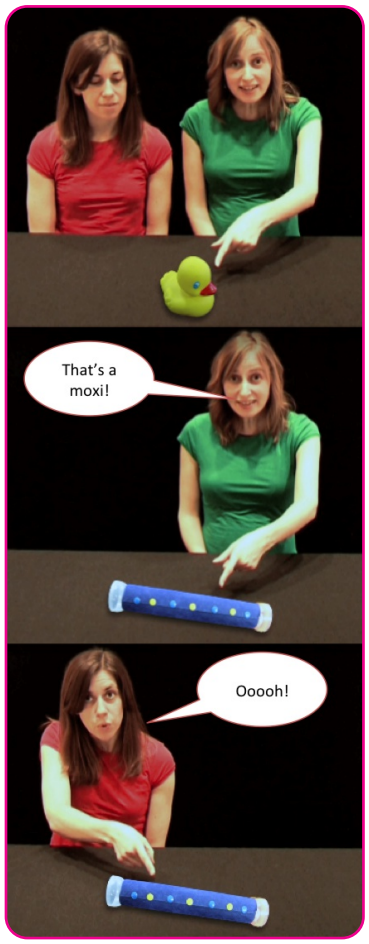


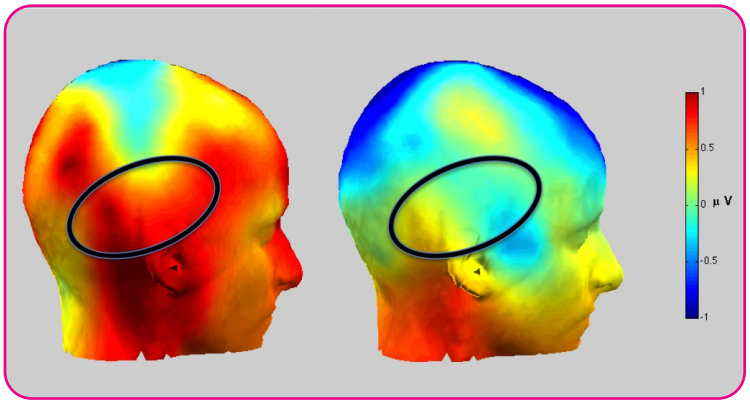
Ready to Learn

By Katarina Begus

We presented 11-month-old infants with videos showing two adults: one of the adults always provided information about a new object; the other adult was engaging but did not provide any information. While the babies were watching these videos we recorded their brain responses using an EEG* sensor net. We were interested in finding out whether their brain responses were different when they expected to receive information, in other words, when they saw the informative adult.

Our findings suggest that 11-month-olds show 'preparatory' brain responses, which have been shown to predict successful learning in adults, when the babies saw the "informative" adult, but not when they saw the "non-informative" adult. We hope this study will set the groundwork for future studies, and will help us understand better how babies learn from others.





***EEG Sensor hat:** A type of hat that has several sensors that can measure babies' natural occuring brain activity. With this "hat" we can create 3 D images like the one on the left. This image shows diffrent types of brain activation (red = more active, blue = less active) in response to the Ready to Learn study.

Salient Conflict

By Kristen Swan

We were interested in finding out how infants learn to pay attention to relevant visual events and ignore distractions that may be more interesting and/or attractive, such as smiles and motion. We showed 6- and 8-month-olds two shapes: 1) a shape that was more interesting to look at, but did not prompt a reward – which we called a "distracter", and 2) a shape less interesting to look at, but it would be followed by a reward (in this case, an animation) – which we called relevant (predictive) cue.

Using an eye-tracker*, we measured how quickly infants switched their attention from the distracter to the predictive cue. We found that although 8-month-olds were very successful at moving their attention away from the distracter, 6-month-olds had more trouble switching their attention. We then, changed our shapes and showed a new group of 6-month-olds two shapes that were equally attractive, and found that the 6-month-olds were now able to learn better the relevant predictive cue, looking more rapidly and for longer time. This study suggests that younger babies have more difficulties shifting their attention when presented with interesting distractors.

***Eye-tracker:** This is a specially designed camera that can track babies' eyes from a distance while they freely watch images/videos on a screen.

The Culture study

By Atsushi Senju and Angélina Vernetti

Different cultures often have different norms on how to communicate. For example, East Asian cultures tend to use shorter and less frequent eye contact during face-to-face communication, compared to West European cultures. We don't yet know whether such a different use of eye contact between East Asian and West European cultures affects the way infants learn to look at others' faces.

To help answer this question, we showed British and Japanese 1 to 8 year olds several videos in which a lady looked at them or looked away. Children' eye movements were recorded with an eye tracking camera. We are now looking at the results, and will hopefully share them with you in our next newsletter.

Baby Steps study

By Carina de Klerk

Previous studies have shown that when infants observe an action, a similar pattern of activation can be observed in the motor areas of their brain (what we call the motor cortex), as when they actually perform the action themselves. The aim of this study was to investigate how these associations between 'seeing' and 'doing' might develop.

One possibility is that brain activity during the execution and observation of actions becomes coupled because infants often watch their own arms and legs in motion. To test this idea 3 groups of infants who could not yet walk received different kinds of experience with a novel action (in this case stepping). Before and after this we measured their motor cortex activation using an EEG hat while they watched videos of another infants' stepping actions (see picture on the right).

Preliminary results suggest that all infants showed more activation in the motor areas of the brain at post- than at pre-test. However, this did not seem to depend on whether or not infants received any active experience with the action. This suggests that a) motor cortex activation when observing others perform an action does not necessarily depend on infants' own motor experience and b) that the visual experience of the pre-test alone was sufficient to result in greater motor cortex activation when the infants observed the leg actions at post-test.

Baby "fixations"

By Irati Rodriguez Saez de Urabain

Our aim is to develop a computer model that simulates babies' looking behaviour in the first year of life. Using an eye-tracker we can obtain very detailed information of babies looking behaviour while they watch natural complex videos, similar to the images that babies are exposed to in their environment. We will follow infants from 3 to 12 months and present them with (1) a set of customized naturalistic videos whereby three people perform several baby-friendly actions (see picture above on the right), (2) a second set of abstract non-social videos created from the first set, and (3) static images.

Our initial results show that babies adapt their looking behavior to different viewing conditions from a very early age. We are now trying to find out how each baby adapts their own looking behaviour at different ages.

Perception and attention in infants and toddlers with Down syndrome, Fragile X syndrome, and Williams syndrome

By Dean D'Souza, Hana Kyjonková, and Annette Karmiloff-Smith

The aim of the study is to determine whether the measures being developed and used to identify early signs of autism (in our Babysibs study) are specific to autism or whether they are also found in other disorders. We plan to do this by comparing infants/toddlers with Down Syndrome, Fragile X Syndrome, and Williams Syndrome with Babysibs and typically developing infants on tasks that assess the way in which children scan faces and objects on a screen, how they pay attention to their environment and switch their attention among different objects and events, and how they perceive and attend to faces.

Understanding how autism and other genetic disorders emerge in early infancy can provide answers to puzzling questions, including some of the factors that influence or shape atypical development in other developmental conditions. It can also help explain why outcomes are so variable in different children, and pave the way for tailoring interventions to individual syndromes.

Baby Touch

By Maria Laura Filippetti

Psychologists and even philosophers have proposed different theories on how we perceive our own body. Understanding, for example, that the face we see in front of a mirror is our own face, or that the hand that is moving is our own is an important part of development.

The aim of this study is to investigate the processes in the brain that are related to body-awareness in infancy. We will be showing babies either a live or a delayed video of their faces while the researcher gently strokes their cheek with a soft brush. This video the babies sees will either match or not match this stroke. By using the NIRS* hat while babies are watching the videos, we can see whether there are specialised areas for recognising the self in infants' brains and whether they differ from the areas found in adults. This study will help us not only understand more about the development of self-awareness in the first year of life, but will also contribute to the knowledge of specialised areas of the brain during development.

***NIRS** is a soft hat containing sensors, which uses small lights to measure changes in oxygen levels in the brain, which can tell us how active the brain is in specific areas.

The Sighted Infants of Blind Parents study

By Atsushi Senju, Leslie Tucker, Helena Ribeiro, Kim Davies, Helen Maris, Greg Pasco, Erica Salomone and Angélina Vernetti

Infants have an amazing capacity to learn from adults. Such capacity for social communication develops rapidly in the first few years of life. The main purpose of this study is to explore how sighted babies of blind parents develop the brain mechanism and skills for social communication, especially how their brain learn to process face and gaze, and how they develop skills for face-to-face communication.

In this on-going study, babies visit our lab with their blind parents two or three times at different ages. During each visit, babies watch several images and movies of faces while we recorded their eye movement or brain activity. Babies also play several games, which assess visual, motor, language and social skills development.

British Autism Study of Infant Siblings

This is an ongoing longitudinal study following up infants who have an older sibling with autism. Our aim is to gain a better understanding of why some children develop autism and others do not.
The second group of infants taking part in this project have now completed their last visit and the third phase of the project is now well under way, with some of the infants who first visited us when they were 4-8 months old coming in for their 2 and 3 year visits.

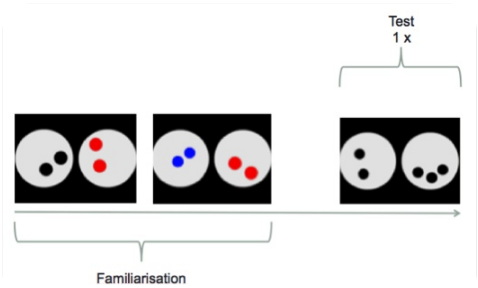
These are very exciting times for BASIS as we are now analysing, and in some cases, publishing, the results of the last 5 years of studies. Check out our website -www.basisnetwork.org – for all updates on our latest publications!

What do you know about numbers?

By Manuela Pisch

Very young babies seem to be able to perceive a difference in number/quantity and interestingly this ability develops mostly during the first year of life. However, little is known about how exactly this ability develops and relates to other aspect of the baby's life.

We have designed some short games, where we show babies a series of images with a certain number of dots in them, and after a few images we change the number of dots and see if the babies noticed the change. We found that although very young infants, such as 4-months-olds prefer to look at images with a larger number of dots, they did not detect the change in number. However, older children are able to detect the changes in large numbers of dots, such as 8 and 16.

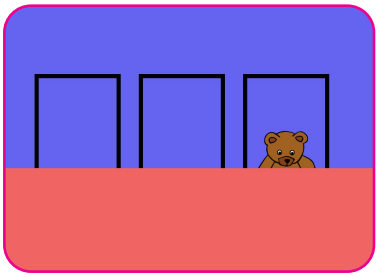


We now would like to know more about how number processing is influenced by other aspects of development, such as attention, social aspects of interaction, memory abilities and sleep. Therefore, we are currently investigating those aspects in a longitudinal study which will be completed in May 2013.

The Infant Time Machine

By Denis Mareschal, Caspar Addyman & Sinead Rocha

We want to understand if babies have a sense of time. Can they tell if something is happening quickly or slowly, or when a repeating event will happen again? We tested this by playing a version of peek-a-boo. A teddy bear pops up from behind a screen 7 times in a row. On the eighth time the bear doesn't reappear when expected. This surprised the babies. Our eyetracker showed that their pupils get wider at exactly the moment the bear was supposed to reappear. Our next experiment will test if reaching for an actual object improves a baby's judgment of time.



Frequently Asked Questions

Q: I would like to visit the Centre, but would like to find out more about travel arrangements. How is it done?

A: We will always cover your travel expenses when you come to visit the Babylab. If you are outside of our taxi zone you can arrange your own taxi/train, keep your receipts, and you will be reimbursed during your visit. We can provide a taxi service if you live close to our Centre. If you decide to drive to the Centre we provide a parking space close to our building reserved for visiting parents. We always reimburse petrol costs and the congestion charge. Please remember that we cannot pay the congestion charge for you, though if you are unsure of how to pay the charge we can help you through the process during your visit.

Q: What if my baby does not want to participate on the day?

A: You should not feel badly if your baby decides they would rather not participate on the day of your appointment. This can be for many reasons: heat, teething, illness, tiredness, etc. Some babies just find the study too boring to look at. This does not mean that your baby will always react in this way during a study. Babies change day-to-day, hour-to-hour. We will be happy to ask you back for another visit if your baby comes within the appropriate age-range for another study.

Q: Do you ever need adult participants for your studies?

A: Yes. Sometimes we do run studies and require adult subjects. There are also other studies running within the Department of Psychology at Birkbeck College.

If you are interested, you can fill out a Volunteer Form at: https://psyc-bbk.sona-systems.com/student_new_user.aspx

Q: Can I find out if my baby is developing normally from the data you collect during your studies?

A: At the Babylab, we do not study the performance of individual babies. Our studies are not intended to be diagnostic tests that give results on the development of the individual - the information we receive from the babies is grouped to provide overall results.

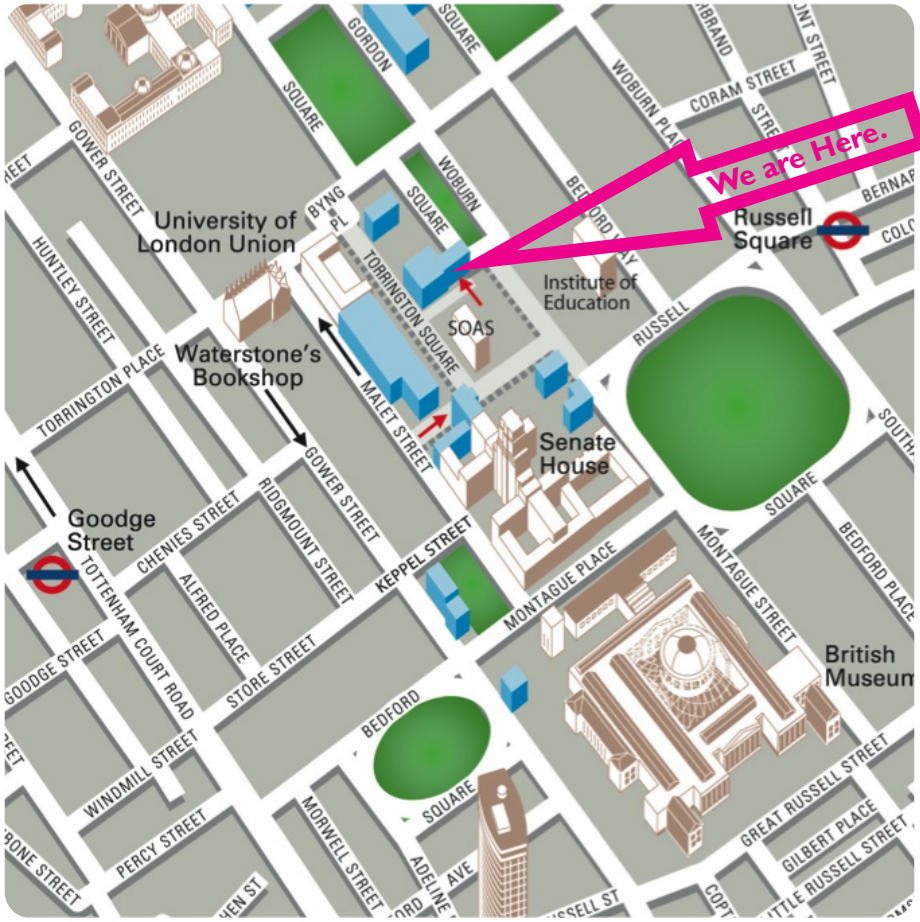
Q: What if my baby is asleep, hungry or needs changing upon arrival?

A: Many babies fall asleep during their journey to the Babylab. We try to let the babies make their own schedule. We want happy babies so that they will be content to sit through our studies. If a baby is tired, hungry or wet, they are unlikely to want to participate. Therefore, we encourage you to carry on with their normal schedule as far as possible, even if it is during a visit. We have changing facilities at the Babylab and you can also feed your baby in the reception area. Water, tea and coffee are always available for parents and carers. However, if you know that your baby naps/eats regularly during certain hours, please mention this when booking an appointment.

Q: I received my packet of information from the Babylab months ago, but I've not been asked to participate in a study . . . will I get a call?

A: Whether or not you are called for an appointment is completely dependent on the studies that are currently running. Each study has an age range that is specific to a particular stage of infant development. If you have not been contacted it is not because we have forgotten about you, it is only because your baby does not fit into the age range of one of our current studies. Our studies are constantly beginning and ending so new opportunities may arise!

The map of where we are



The **Birkbeck Babylab** is located in the **Henry Wellcome Building**, just off Torrington Square, around the corner from the 'Clore Management Building' (on the walking path between Torrington Square and Woburn Square).

Signs on either side of the doors say 'The Wolfson Institute for Brain Function and Development' and 'The Henry Wellcome Building'.

We are within walking distance from the following stations: **Russell Square, Goodge Street, Euston, Euston Square, Warren Street, Kings Cross and St Pancras**.

If driving and using Satnav input WC1H 0AA (not our building) **to take you to Woburn Square.** The Babylab has two areas available for parking: **Woburn Square** (both sides) and **Torrington Square**. Woburn Square is easier to access within the one-way system in this area and you can park on either side of Woburn Square. To enter Torrington Square you must make your way through the one-way system to Keppel Street to get into Malet Street. From Malet Street turn right through the University of London gates, then left into Torrington Square (drive down the slope) and park on the right-hand side of the square. When you arrive at the Babylab, we will provide you with a temporary parking permit. If you are staying overnight for a study, we recommend that you park on Torrington Square to guarantee a parking space.

Taxi drivers: Please ask the driver to drop you outside 28 Woburn Square, **WC1H 0AA** (not our building). Once at the top of the square turn right and walk up the paved slope. The Henry Wellcome Building is a new building on the right.

Is your baby an infant scientist?

If you're pregnant or your baby is between the ages of 0-18 months, your baby can take part in one of our studies.

To register and find out more visit our website:
http://www.cbcd.bbk.ac.uk/babylab
Contact:
Telephone: 020 7631 6258
email: babylab@bbk.ac.uk

We will arrange your visit to fit in with your own schedule and we will reimburse any travel expenses within London and the surrounding areas.

If you have a friend who you think may enjoy a visit to the Babylab please ask them to contact us too. We are constantly in need of babies from birth to 18 months to help us with our research.

Don't lose touch! If you are moving house or having another baby please let us know so that we can update our records. Ring us on 020 7631 6258, return the form below or contact us via e-mail at babylab@bbk.ac.uk.

✂ ----------

Parent's name_____ **Daytime tel**_____

Address_____

_____

Baby's name_____ **Sex**_____

DOB (or expected date)_____

Please return form to:

The Babylab
FREEPOST RRGX-ARGH-SESR
Centre for Brain & Cognitive Development
The Henry Wellcome Building
Birkbeck, University of London
Malet Street
London WC1E 7HX

Or you can…
Tel: 020 7631 6258
E-mail: babylab@bbk.ac.uk
Website: www.cbcd.bbk.ac.uk