Plymouth Babylab Annual Newsletter 2013-2014

Hello! Welcome to the Plymouth Babylab's annual newsletter! Firstly, we would like to say a huge thank you to all the parents and children who have visited us this year- without your support we would not be able to have the exciting results we have so far! We hope you enjoy reading about all the ways you have helped us over the last year.

We have had a very busy this year with lots of different studies being carried out. This year, we have had almost 1000 visits from families since last June! This is an astonishing number and we are very grateful for the new and continued support we have received throughout the last year. We hope that we will see many of you back in the Babylab soon!

This year, we had 8 final year project students working within the Babylab who have completed research which has been used for their dissertations. The findings from these studies can be found below.

Here at the Babylab, we are lucky enough to have the opportunity to attend conferences which bring together the new discoveries people have made. This year, some of the Babylab staff have travelled to Berlin and Amsterdam to spread the word on the findings we have made throughout the year!

We have also started a new exciting project which involves collecting information from bilingual families. We are trying to develop an idea of what is typical language development for a bilingual child. If you or anyone you know is raising a child under 2 years old bilingually please sign up at our website. http://www.psy.plymouth.ac.uk/ukbilingualtoddlers

Do you have any older children who may not be on our database? We would love to have them be a part of the Babylab too! We have studies for older children which look at moral, social and emotional development. You can let us know by calling 01752 584865 or emailing us at plymouthbabylab@googlemail.com.

Over the past year you may have met Paul and Jodie during your visit to see us, they will be leaving this month to continue with their undergraduate degree. They will be replaced by three new placement students in September: Louise, Rebecca and Lauran.

Be sure to 'Like' us on Facebook to keep up to date with what is happening in the Babylab
www.facebook.com/plymouthbabylab

Babynames (5 months)

Dr Claire Delle Luche and Dr Caroline Floccia.

Learning a language is pretty difficult, but 5 month old infants are already doing pretty well! They can recognise "mummy", and also their name. We have been running two versions, an easy one where baby Imy will hear her name or another one alternatively (e.g., Alex), and a harder one, where she would hear Imy or a mispronunciation (e.g. Emmy).

We expected babies should listen longer to their actual name, and this is the case for the easy version.

Why do babies not notice the difference in the hard version? Maybe because the difference is very small, so soon we'll try a bigger difference.

Fascinating rhythms (5 months)

Dr Laurence White, Dr Caroline Floccia and Dr Claire Delle Luche.

Babies are surprisingly good at telling different languages apart. Speech rhythm – the flow of syllables, some louder and longer than others – seems to be important for this. However, some researchers claim that certain groups of languages are difficult for babies to distinguish – English, German and Dutch are claimed to have similar rhythms, different from those of French, Italian and Spanish. We played French speech to English five-month-olds for a few minutes and then either switched to Spanish or kept playing French.

We found that babies were more interested when the languages were switched, which was also true if they were familiarised with Spanish and French was the unfamiliar language. This clearly shows that five-month-old infants can hear a difference between the two languages, an ability not predicted by previous theories.

This suggests that rhythmic differences between languages such as French and Spanish may be greater than once thought, which could be important for how we teach our children to learn other languages.

Size Perception (6 and 12 months)

Dr Caroline Floccia, Dr Claire Delle Luche and PhD student Samantha Durrant- collaboration with Prof Roy Patterson from Cambridge University and Prof Sue Denham from our School.

Most baby animals are born with the ability to quickly identify other members of their species around them, which is vital for their survival. They can also judge very quickly whether they are facing an adult or another immature conspecific. For example chimps can determine whether cooing is produced by an adult or a young chimp, using acoustic information about vocal tract length.

What about human babies?

We are notoriously born with poor abilities to deal with the world - we rely on others for many, many years. In this experiment, we examined whether 6-month-olds would be able to distinguish between an adult voice and a child voice, using vocal tract length information. Babies were presented with videos of a blond (or a brunette) woman next to a blond (or brunette) child, repeating syllables ("bee" and "bu"). These syllables were computer-generated to either match the vocal tract of an adult or that of a child.

We tested 34 6-month-olds, and found that overall they were able to match the vocal tract length to the speaker, that is, they would look longer at the adult upon hearing a syllable produced with a long vocal tract, and longer at the child upon hearing a syllable with a short vocal tract. However, a closer inspection of the data shows that this effect seems mainly due to one condition: the syllable "bee" produced with a short vocal tract.

ILV: Illegal and Legal Vowels (6 and 9 months)

Dr Caroline Floccia and Dr Claire Delle Luche working in collaboration with Dr Katrin Skoruppa, UCL.

When we hear speech, it very rarely comes as series of words separated by pauses; all words are produced one after the next in a regular flow. One major problem faced by the child is to determine, in this flow, where is the start of a word and its end. To have an idea of the difficulty of this task, you can listen to a radio in a foreign language and try to spot words. One possibility that English babies could exploit is to locate lax and tense vowels (lax: as in lid and tense as in lead). A rule of English is that you cannot find a word ending with a lax vowel, but you can find words ending with a tense vowel. So you can have "bee" (tense) but not "bi" (lax). If infants can learn this rule, they could exploit it when listening to locate possible word endings.

We ran two experiments this year, both with 9-month-olds. We tested 24 infants in each experiment; in the first one, we presented lists of pseudo-words that are "legal" in English: they all ended with a tense vowel like "bee", but they were not existing words. We also presented infants with lists of "illegal" pseudo-words, ending with a lax vowel. As predicted, infants preferred to listen to the former than the latter, suggesting that they have learned this English rule by this age. In the second experiment, we wanted to rule out the possibility that they would prefer tense vowels over lax vowels in general - after all, tense vowels are longer, so perhaps they are more interesting.

So we presented them with lists of pseudo-words containing either a lax or a tense vowel, but this time they all ended with a consonant (example of real words: lid versus lead). This time we found no preference, suggesting that infants were truly sensitive to the end-of-word rule related to tense/lax vowels.
We have recently started testing 6-month-olds with the first experiment, to investigate when exactly the ability to use these vowel differences emerges in development. We are also in the process of writing up the results for publication in a peer-reviewed scientific journal.

UK/US (10 months/16 months)

Dr Caroline Floccia.

When we hear speech, it very rarely comes as series of words separated by pauses; all words are produced one after the next in a regular flow. One major problem faced by the child is to determine, in this flow, where is the start of a word and its end. To have an idea of the difficulty of this task, you can listen to a radio in a foreign language and try to spot words.

Twenty years ago an American team first demonstrated with an elegant procedure that American infants from the age of 7.5 months could actually extract words from continuous speech. It is quite simple: the infant is familiarised with two new words, such as "hamlet" and "kingdom". Then she will hear the same two words in sentences ("this hamlet is very far away from the mountain"), plus sentences containing words that have not been presented before. If the child can extract words from continuous speech, then they should listen longer to the sentences containing hamlet and kingdom than to the other sentences. Well, as it happens, a few years ago we attempted to replicate this result here in Plymouth for different purposes at the time, and we failed. We tried again, and again, changing some parameters every time: the age, the words, the timing..

We were about to give up when we met with colleagues from York who had exactly the same problem. So we decided to gather all our null results and try and publish them; our point will probably be to claim that British English is more difficult to segment for young infants than American English. What we did this year was to test a last possibility: the role of infant-directed speech. So a group of 10-month-olds was presented with sentences either produced with a reasonable level of infant-directed speech ("UK") or an exaggerated one ("US"), at least according to our standards. This didn't work either; infants were still unable to recognise the words in continuous speech. We are also testing a group of 16-month-olds at the moment, because we are 99% sure that at this age, our British toddlers can segment speech in this procedure.

How well do infants perceive consonant and vowels sounds? (12 months)

PhD student Jacqueline Turner.

The use of event-related potentials (ERPs) is a popular technique to use to explore how infants process speech because it is considered very safe, and not demanding. Infants can just sit and play while they listen to speech sounds. Jacqui's ERP task was a passive listening task which looked at how 12 month olds perceive sounds within syllables. We wanted to know what would happen if we played infants 4 syllable sounds such as *TA,* and then changed the 5th syllable to *TI* which involves a vowel change compared with a syllable that involved a consonant change such as *KA*. We also wanted to know what would happen if we changed the position of the consonant and vowel sounds, so if we played infants 4 syllable sounds such as *AT,* and then changed the 5th syllable to *IT* which involves a vowel change compared with a syllable that involved a consonant change such as *AK*.

We tested lots of babies for this ERP study, and the results show us that although 12 month infants detect consonant and vowel changes very well, they do however respond to the consonant changes more slowly than they do to the vowel changes.

UKCDI (12 months – 3 years)

This project is collaboration between Lancaster, Liverpool and Lincoln universities.

When you come to the Babylab, if your child is aged between 12 months and 3 years, chances are we ask you to fill in a CDI, a Communicative Development Inventory. This is a list of words (usually 416) that are part of the children's first words (e.g. dog, run, mummy...).

This CDI is very useful for research purposes, but also on many clinical environments: it is one of the only tools to evaluate toddlers' language development. However our current CDI, the Oxford CDI, could be improved. It was standardised 15 years ago in the Oxford area, and a team of our colleagues felt that gathering more data from different parts of England was necessary. So they got a grant from the ESRC, one of the Research Councils, to collect data from toddlers from all around the UK and create new norms for this CDI. They asked us to take part as we have one of the largest Babylabs in the country. So earlier this year we emailed all of you with a child within the target age range, and asked you whether you wanted to help- Your response has been fantastic! More than 60 families from the South West have replied, and this is really good for the norming data. All there was to do was to fill in a family questionnaire with demographics data mainly, and the CDI itself.

Once completed, the norms will be freely available online, so that you can see what your child has contributed to.

ConsVow cartoon (16 months)

Dr Claire Delle Luche and Dr Caroline Floccia.

How easy is it to learn two words that are different only by one sound? We used an eye tracker (infra-red camera that can calculate where a person's eyes look on a computer screen) to observe whether children notice the difference between two words they have just learned in a cartoon. We expect that "tof"-"dof" should be easier than "tof"-"taf". The first version that we tested last year showed that children are just as good for both, and now we have just started a new version, where the change is at the end of the word, something that should be more difficult to do!

SemCat (18 months)

Dr Claire Delle Luche and Dr Caroline Floccia.

This year we published in a scientific journal the first study showing that 18 month old infants, upon hearing lists of words, actually realise that these words share a link (e.g., cat, horse, pig are all animals) and use this information! Now we want to understand better this "semantic network" (or mental dictionary) and answer two questions. When does the delay between the words break the semantic link? When learning a new word (e.g., "fep") heard with animal names, does a child extrapolate that a "fep" must be an animal like the others?

We have just started a study to test the second question, and are very excited to see what happens!

ME: Learning new words (18, 21 and 24 months)

PhD student Samantha Durrant.

We all know that children learn words quickly and with comparative ease. One topic of interest has been finding out how they do this. One idea for this is that they use a strategy called Mutual Exclusivity.

This means that when they hear a new word they match it to a new object they can also see, relying on the premise that objects can have only one name. There is evidence that children hearing more than one language don't use this strategy, but what about children hearing more than one accent?

So far we have found that Plymouth children aged 18 months are not using this strategy to learn words, yet by 24 months they are using it successfully – though there are no differences related to the accents they are hearing. We are now running this study again with children aged 21 months to see if we can identify any differences during the time when they are beginning to use this strategy for learning new words.

We have currently had 10 children come in and do this study and are very much looking forward to seeing what the results will show!

OC20 study (20 months)

PhD student Jacqueline Turner.

At 20 months old are infants better at detecting changes in familiar words if you change a consonant or a vowel? Will they notice a consonant change if it is at the beginning of the word or at the end of the word, and will they notice a vowel change?

The Intermodal Preference Looking (IPL) task is a common method used to investigate the level of phonetic detail in children's early words by making a comparison between looking times for correctly named objects with incorrectly named objects. In this study we presented toddlers with pairs of images and named one, half of the time using the correct name and half a mispronounced name e.g., "Bib" "Wib" "Bim" or "Beb".

In this study we tested 40 infants and the results show that 20 month old infants process vowels and consonants equally. We found no differences between the consonants that are changed at the beginning of the word, or with the consonants that are changed at the end of the word.

RnR (20 months)

PhD student Samantha Durrant, Dr Caroline Floccia and Dr Claire Delle Luche.

A rhotic accent is characterised as having 'r-colouring' after a vowel, for example in the pronunciation of 'farm' and is typical of South-west accents. Here in the Babylab we found that all infants recognised familiar words only when they were produced rhotically, even those who did not hear these pronunciations at home.

We also found that in Oxford, where the rhotic accent is uncommon children did the opposite – they recognised only the non-rhotic words. Of course, it seems unlikely that a child who hears non-rhotic pronunciations from mum and dad would not recognise these words, so this year at the Babylab we have started a new version of this study where only non-rhotic versions of the words are heard. We wanted to see whether it was the presence of the rhotic version of words that affected recognition of non-rhotic versions.

So far we have seen 21 children for this study and the results seem to support our thinking that children do recognise and understand the non-rhotic versions of familiar words. However, when hearing both they show a preference for the rhotic versions which are those heard in the community.

Allophones: Word Recognition (21 months)

PhD student Samantha Durrant and Hannah Jenkins in collaboration with Dr Laurence White.

We already know that children are great at noticing mispronunciations of words they know, if we say 'gat' instead of 'cat' children do not look at a picture of a cat, unless of course they hear different pronunciations because one (or both) of their parents is not from Plymouth. In this situation children are flexible in what they accept as the name of the object, looking at the cat even when they hear 'gat'. But what about words that children often hear pronounced differently? For example 'water' where the 't' is not always obvious. We took these two pronunciations and played them to children while showing them two pictures (e.g. one of a glass of water and one of a watch). Interestingly, none of the children recognised the picture when the 't' sound was less obvious in the word.

All of the children in this study (even those hearing different accents) recognised only the full pronunciation of words such as 'water'. This tells us that when hearing words and matching them to pictures children prefer the pronunciations that have all of the sounds clearly pronounced.

WinG: Words in Game (21 to 36 months)

Dr Allegra Cattani, Dr Caroline Floccia in collaboration with Dr Andrea Krott from University of Birmingham.

Word learning is fast and with great variability among the children at the same age. The study is now finished with a total of 400 children seen in English nurseries (Kent, Sussex, Essex, Birmingham and Plymouth) including over 100 who visited this year our own Babylab. Children aged 19-37 months were asked to play a card game, in which we looked at their knowledge of nouns and verbs to build a measure of word acquisition suitable for British English children

We can already see a lovely learning curve of words! For example, almost all children know the word '*cow*' at 24 months but only few recognised the word '*backyard*' though after 6 months nearly all children know it! Mums may be surprised to hear that their little one will say these difficult words just a few months later!

We hope to share our experience with the health care professionals for their use to identify children at risk of language difficulties.

Objects (21-30 months)

Dr Beata Grzyb, Dr Caroline Floccia and Dr Allegra Cattani.

Toddlers can often be seen to make the mistake of acting as if a miniature object is the same as its full-size counterpart, such as attempting to sit on a toy chair. These mistakes are called "scale errors". We are trying to find out the nature of these errors and their potential relation to language development: does a child with a larger vocabulary perform more scale errors than a child with less advanced vocabulary? And if so, which types of words of vocabulary are particularly developed in children who make scale errors?

The study focuses on the age range from 21 to 30 months when children appear to be the most susceptible to generate scale errors. Firstly, having watched some cartoons of impossible or possible actions, children are presented with a short computer task where they choose which of two possible figures a shown object belongs to.

Then, they play with some large size objects (a Little Tykes car, baby gym and chairs) before playing with small replicas of these objects. Here we observe how children interact with the small replicas and whether they will demonstrate any scale errors. Data collection is currently ongoing but the initial results show an encouraging relation between children's scale errors and the number of nouns and adjectives in their vocabulary.

Phon (24 months)

Dr Claire Delle Luche and Dr Caroline Floccia.

In this study, 2 year olds are presented with pairs of pictures on a TV screen (the IPL task). One of the pictures is named, sometimes correctly, sometimes incorrectly. What makes the word incorrect can be a small change (e.g. "cat" to "gat") or a bigger one (to "pat").

We want to see whether toddlers show a progression that is similar to what the language theories suggest, and we will see that by comparing children's looks at the picture of a cat upon hearing "cat", "pat" or "gat".

Social Judgements (3/4 years old)

Dr Caroline Floccia.

We tend to trust more people whom we know rather than total strangers. But when we don't know people at all, who will we trust more? What characteristics of our own social circle do we pay more attention to? Accents are a good candidate as they signal which sociolinguistic group you belong to, which relates to yours.

In this study, we looked at whether young children are using accent information to base their trust judgement. Three and 4-year-olds were presented with series of two pictures side by side, featuring girls in their twenties, all dressed the same and with no particular signs (no piercing for example). Then each of them was supposedly producing a sentence with a Plymouth accent, a regional accent (Welsh or Irish) or a foreign accent (Russian or Dutch). The children were asked to pick out the one they would prefer as their teacher.
We tested 48 children, 24 in each age group. Unexpectedly, we found no preference whatsoever: children seemed to pick out randomly the girls, no matter their accent. This is all the most surprising that another study in the US had found a strong bias for the native accent with 4-year-olds. Before raising any conclusion about how British children might have less social prejudices ;-) we are designing a new study with some slight modifications, to see how far we can trust our results.

Movement Control (3 to 6 years)

Dr Marina Wimmer and Charlotte Thomas, Charlotte Brind, Kiara Konstantinidou, and Dr Patric Bach.

Past research has shown that watching a model perform a certain sports technique can help to improve sports performance more than just practicing alone. This research however has always been quite subjective as the only way to judge whether there has been an improvement is by observation.

We have designed a study where children will play a game of discus on the Xbox Kinect, watch a video of an adult with a good throwing technique, and then be asked to play again.

Using the Xbox Kinect we are able to record exact movements so will be able to use this movement data to back up our findings with solid evidence.

When tested on adults we found that watching the video did significantly improve their throwing technique. We are very interested to see if this pattern continues with children and if it becomes more effective as they become older.

Parental Report: Emotion skills in childhood *(3-8 years old)*

Dr Belen Lopez-Perez and Dr Michaela Gummerum.

In this study, parents with children aged from 3 to 8 years-old reported about their child's emotional skills. So far we have focused on emotion regulation, which is the ability to change what we are feeling. This skill plays an important role in children's academic achievement or on their social relationships.

We analysed parents' descriptions, finding very interesting age differences. Younger children tend to use distraction (e.g. "He was cross about a situation and spent a few minutes calming down by distracting himself with a book or toy") or looking for affection to cope with a situation (e.g. "she will cuddle teddy to calm herself down").

However, older children tend to see the situation from another perspective (e.g. "she realised that the situation wasn't what she first thought...and changed how she was feeling"). These results add more information about children's emotion regulation skills and the strategies used to cope with different situations.

UK Bilingual Toddlers Project

Bilingual Questionnaire (24 months)

Dr Caroline Floccia, Dr Allegra Cattani, Dr Claire Delle Luche and PhD student Samantha Durrant.

At 24 months most children understand and say many words and many bilingual children do this with two languages. Trilingual children say many words in three languages too! However the proportion of words known in one or the other language is linked to the amount the child is '*living-in*' that language environment.

This year we were so pleased to have received financial support to start a new large-scale investigation for the assessment of English vocabulary for bilingual toddlers aged 24 months! Parents register through an online sign up before their child turns two. Mums and dads are asked to indicate how much English and the additional language, e.g. 'Danish', their child hears during a typical week through a detailed questionnaire and to fill in a list of words their child knows and says in English and in the Additional Language. While Plymouth is the main base, the research team extends in the Universities of Kent, Birmingham, Liverpool, and Bangor.

We know that this work is challenging, so far we have spoken to 14 two-year-olds parents but our target is high, we intend to reach soon 250 (*yes*!) 24-months-old bilingual children who speak English and one of the following languages: Bengali, Cantonese, Dutch, French, German, Greek, Hindi, Italian, Mandarin, Polish, Portuguese, Punjabi, Spanish, Urdu, and Welsh.

Bilingual Priming (24 months)

Drs Caroline Floccia, Allegra Cattani, Laurence White, Jeremy Goslin, Claire Delle Luche and PhD student Samantha Durrant.

The big question is how bilingual children integrate or separate the two languages? Do they learn words in different ways from monolingual children? Bilingual children refer to children being exposed to English and another language (for example, both parents speak Mandarin and the child goes to an English nursery).

Children hear an English voice, for example saying, "*Yesterday I saw a spoon*" and soon after two images representing common words will be presented (for example, a '*bowl*' and a '*bed*'); sometimes one of these images will be related to the word at the end of the previous sentence and sometimes they will be unrelated. At the same time a voice will name one of these two pictures ('*bowl*'). In this case '*bowl*' and '*spoon*' are the related objects.

Will the bilingual children be aware of the related words (the voice '*spoon*' with the image of '*bowl*') like monolingual children or not? It is still too early to say as we have just started this study, but we are excited to see the results once we have tested enough children!

This year has been particularly active in the Babylab, with over 1,000 visits from little ones. The survey that a lot of you fill in after your visit tells us that we are doing well, but there is nothing more rewarding for me than chatting with a parent who has been here for third or fourth time, and whose toddler runs in, knowing exactly where the toys and the balloons are!

Jodie and Paul have been fantastic Babylab placement students, and we will be very sad to see them go. Over the summer, Andrea and Marina from Spain, and Dorota from Poland will replace them, followed by Louise, Rebecca and Lauran in September. We wish you all a fantastic summer!

Dr Caroline Floccia, Head of the Babylab.

Have your details changed since you signed up? If so please tear this form off and send it back to: FREEPOST, Babylab- School of Psychology, University of Plymouth, Drake Circus, Plymouth, PL4 8AA. We will contact you as soon as we receive your form.

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