



# OSCCI NEWSLETTER



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## Putting language impairment on the map The RALLI Campaign

Most people have heard of autism and dyslexia, but if you mention Specific Language Impairment (SLI) you usually get a blank look. Together with colleagues Maggie Snowling, Courtenay Norbury, Gina Conti-Ramsden and Becky Clark, Dorothy Bishop has set up a YouTube channel to provide information about language learning impairments in children. You'll find short videos for parents, children and professionals.



Visit [www.youtube.com/RALLIcampaign](http://www.youtube.com/RALLIcampaign)  
or follow @RALLIcam on Twitter

Thanks to Afasic Cymru, Waterloo Foundation, and ESRC for help with funding for RALLI

## How twins can help us unravel causes of language problems

People often assume that some children's difficulties with learning to talk, understand or read are caused by the environment in which they grow up. However, by studying twins we've been able to show that genetic differences are also important. On many language measures, identical twins (who share all their genes) are more similar to each other than non-identical twins (who share roughly half their genes). This suggests that genes play an important role in influencing children's language development.

We are now extending this work using ultrasound to measure which side of the brain works hardest when children use language. In most people the left side of the brain is more active than the right when they talk. We've found that in children with language difficulties this may not always be the case. We would love to hear from families with 7-11 year-old twins who might like to take part. Please contact [oscci@psy.ox.ac.uk](mailto:oscci@psy.ox.ac.uk) for more information.

## Sequence learning and SLI

Sequential relationships are an important part of language. Just by altering the order of two words in a sentence, the meaning can change: "*the cat chases the duck*" is not the same as "*the duck chases the cat*". Some children with language impairments are poor at understanding word order, and we wanted to find out whether this indicated a general problem with sequences. We tested this idea by comparing children's performance in two learning tasks, one that involved sequences (tracking the location of a green monster that moved in a regular sequence) and one that did not (following a red dot using a stylus pen). We found that children with SLI were poor at the sequence learning task, but not at dot-tracking. Another kind of basic learning – learning to blink before a puff of air is presented to the eye – was also perfectly normal in SLI. This study shows that children with SLI have normal learning abilities in many areas, but have problems that extend beyond language when sequences are involved.



L-R Julie Hsu, Mervyn Hardiman, Annie Brookman, Nikki Gratton, Anneka Holden, Georgina Holt, Eleanor Paine and the Green Monster!

## Reading fast and slow



*Elsje van Bergen (right) recruiting families at the Science Museum*

It's easier for children to learn to read in Dutch than in English, because the language is very regular. Dutch children don't usually make mistakes when reading, but some still find reading hard, and just read very slowly.

This year, Elsje van Bergen was awarded a Rubicon Fellowship from the Netherlands, and she will be studying family factors affecting reading speed. Elsje found many families who visited the Science Museum in Amsterdam were happy to take part in a scientific study.



*A champion in the spit competition!*

Whole families completed a range of reading and reading-related tasks. They also provided DNA by spitting in a tube. Some families turned it into a competition: who is the fastest reader and who is the fastest spitter! So far Elsje has data from over 600 people. Her study will tell us how the reading skills and habits of parents are related to reading skills of their children. And DNA analysis of the spit will help in the search for genes that influence reading ability.

## Language, reading and movements

How are reading and language problems related, and do they involve brain regions that control movements?

Annie Brookman has been analysing results from over 300 children to see if those with reading and language problems are slow or inaccurate in making movements. When doing a simple movement – repeatedly tapping the thumb and forefingers, all children performed equally well, regardless of language and reading ability. But when tapping the thumb to each finger in sequence, children with reading impairments were not as fast as those without reading impairments. Children with language impairments, however, were more likely to do poorly on a task that involved imitating the hand position of another person. These findings suggest that language and reading impairments are linked to movement difficulties, but not in the same way. This work can provide clues as to the neurological basis of these difficulties.

## Brain stimulation study

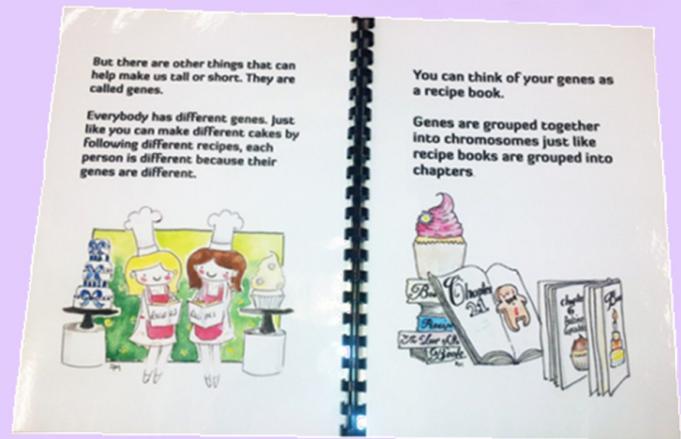
Neuroscientists are excited by a new method of brain stimulation that may be useful in intervention for people with language problems. A very low level electric current applied to the brain can help some kinds of learning. Julie Hsu and Annie Brookman have worked with medical student Layla Guscoth to see whether 20 minutes of brain stimulation could improve the ability to distinguish between English vowels. They tested over 30 Chinese-, Japanese-, and Spanish-speaking adults using a training programme devised by Dr Paul Iverson. They found that training improved people's ability to distinguish English vowels, but the brain stimulation made no difference. It is early days for this method but we suspect that it may be more effective for training speech production than speech discrimination.



*Layla Guscoth, Julie Hsu and Annie Brookman practise using the stimulation equipment*

## Children with an extra X or Y chromosome

Most females have two X chromosomes and most males have an X and a Y chromosome. Some children, though, are born with an extra X or Y chromosome. These children are at greater risk of having difficulties with speech or language than their siblings, but some don't have any problems. Last year we described our study of language and social development in children who have an extra X or Y chromosome. We are continuing to recruit for that study and would like to thank all those families who have taken part so far.



One issue that parents have raised is how and when (and if) they should tell their child about having an extra chromosome. With funding from the Nuffield Foundation, Dorothy Bishop and Nikki Gratton have started a new project to develop some resources to help parents with this issue. Over the summer we ran two study days for parents who have a child with an extra X or Y chromosome and talked to them about their experiences and opinions. Using their input we have put together a story book for young children. We will be testing this out in schools very soon to see how well children understand it. We are also creating a guidebook for parents to help them make a decision about telling their child based on other people's experiences. This should be available in 2014.

## Specific Language Impairment and Autism Spectrum Disorder: Is there any overlap?

At first glance, autistic spectrum disorder (ASD) looks very different from specific language impairment (SLI). Children with ASD have broader problems with social interaction and repetitive behaviours, whereas in SLI the most obvious difficulties are with spoken language. Nevertheless, it's been noticed that there are some similarities in language abilities, at least for some children with ASD. One skill is verbal repetition, measured by asking the child to repeat back a sentence or a word that they hear. This has been seen as a good way of testing verbal memory, something that is often weak in children with SLI. However, poor performance on verbal repetition is often seen in children with ASD.

We need to know whether children with SLI or ASD both show problems with these tasks because the conditions have similar underlying causes. Or, do children with ASD do poorly at these tasks for different reasons? If SLI and ASD are similar, then it would make sense to group them together when we are looking for genetic or other causes. But if the similarities are just superficial, then we would just confuse matters by lumping the two conditions together.

Graduate student Hannah Buxton has just started a project to look at this question. She will be comparing imitation skills in children with ASD and those with SLI to see if they have similar types of problem. She will be looking for typically-developing children, children with SLI, and children with ASD to take part in this study. She would love to hear from teachers or parents who may be able to help recruit suitable children aged 9-11 for the study.

Please contact [hannah.buxton@psy.ox.ac.uk](mailto:hannah.buxton@psy.ox.ac.uk) for more information.

You can find out more about similarities and differences between ASD and SLI on:  
<http://www.youtube.com/user/RALLIcampaign/>



## Imitation and language in children with language delay: a follow-up study



Andrea Dohmen, who joined OSCCI this year on an ESRC Postdoctoral Fellowship, recently completed her PhD studying the nature of early language and communication development and disorders. She found that children with language delay had substantial problems in imitating some – but not all – types of action. She recently returned to Germany to see the same children again, to test whether investigation into these early profiles of nonverbal imitation at the age of 2-3 years can

predict children's later language and social communication skills. Her results could help identify children who should receive clinical support immediately and those who are likely to catch up with their age group over time.



*A child taking part in one of the imitation tasks*

**A big THANK YOU to all those families, school staff and other professionals who have helped with all the studies featured in our newsletter.**

**Our research would not be possible without you!**



**OSCCI Team  
2012**

## Hellos and Goodbyes!

This year we welcomed to OSCCI two new postdocs, Andrea Dohmen and Elsje van Bergen, whose projects are described on pages 2 and 4. We also have been joined by graduate students Hannah Buxton (see page 3), and Lisa Bruckert, who will be doing a doctorate on brain structure and function in Specific Language Impairment, co-supervised by Dorothy Bishop and Kate Watkins.

Julie Hsu has completed a very successful postdoc placement with OSCCI, where she has learned to bake cakes as well as to do fancy statistical analyses, while all the time working hard to complete a research project on learning in Specific Language Impairment. Julie returns to her native Taiwan at the end of 2012, where she will be taking up an Assistant Professorship at the Graduate Institute of Audiology and Speech Therapy, National Kaohsiung Normal University.

Eleanor Paine will be moving to Belgium in January 2013, where she will be working as a translator for the European Commission in Brussels.

Both Julie and Eleanor will be sadly missed, but we wish them every success as they go on to greater glory.

**For further information please consult our website, which has details of our research and publications: <http://oscci.psy.ox.ac.uk>**