



OSCCI NEWSLETTER



Oxford Study of Children's Communication Impairments, Department of Experimental Psychology,
University of Oxford, OX1 3UD

<http://www.psy.ox.ac.uk/research/oxford-study-of-children-s-communication-impairments>

Developmental Language Disorder: on people's radar at last!

Over the past couple of years, OSCCI researchers have been tackling what we've called the 'taxi driver problem' – the fact that if your taxi driver asks what you do, and you explain you work on children's language disorders you get a blank look. Things are very different if you say you work on autism spectrum disorder or dyslexia: most people have heard of these.

Children's language disorders are as common as dyslexia, so why has nobody heard about them? One reason might be that there has been no agreement about the words we use to talk about such difficulties. Dorothy Bishop and Paul Thompson from OSCCI got together with Oxford colleagues Prof Maggie Snowling and Prof Trish Greenhalgh to run a consensus study to try to reach agreement about terminology. We involved 57 experts from many different countries, including psychologists, speech-language therapists, doctors, teachers and family support organisations. The discussion was organised on the internet so that people could make anonymous ratings and comments, which made for frank discussion of the pros and cons of different approaches.

It was agreed that we should use the term **Developmental Language Disorder** for children who have persistent language difficulties that interfere with everyday life or academic progress.

A film made by Oxford Impact about this work is available here: goo.gl/gVNuUQ

It's one thing to recommend a new term, but quite another to get people to use it. The first thing we did was to change the name of our raising awareness campaign to RADLD, to reflect the new terminology!



Eddie and Dyls, the stars of our DLD1-2-3 film, which can be viewed here:

<https://www.youtube.com/watch?v=tQ-s02HWLb0&feature=youtu.be>

Then OSCCI alumnus, Prof Courtenay Norbury, now a Prof at University College London organised a DLD day on 22nd September.

This coincided with the launch of a special issue of the Journal of Child Psychology and Psychiatry, focusing on language disorders, and gave us an opportunity to feature a fabulous short film made for the RADLD launch: DLD 1-2-3

You can see more about the impact of DLD day here: goo.gl/ZBgzJV

Many thanks to all the generous people who contributed through a crowd-funding website to make our short film possible.

**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!**

Language learning: easy for many, hard for some

Two of the big questions we ask are how children learn language, and why do some children find it so hard. At a recent conference in the Netherlands, Dorothy Bishop presented an overview of research done with Dr Julie Hsu where we studied children's learning of words and sentence meanings. We found that ability to learn connections between sounds and meanings was generally fine in children with language disorders, but they had difficulties with understanding strings of words in sentences. We think weak short-term memory is a big factor limiting their progress: they can't hold on to the words long enough to work out meanings.

The dog is in the car

The dog is in the car



Secret life of a statistician

Paul Thompson, our OSCCI statistician, plays a vital role in virtually every project we do



We asked him what life was like with so many different people calling on his expertise. He wrote: "Work life for a statistician in a science department is best summed up by the famous statistician John Tukey who said, "The best thing about being a statistician is that you get to play in everyone's backyard".

Like Tukey, I get to work with multiple interesting individuals on a whole range of exciting projects; this has the challenge, and benefit, of continually learning new areas of science. My average day could involve looking at genetic analyses, wrangling transcranial Doppler data, and even, on a very good day, development of new methods to look at statistical learning. I find it very satisfying to see a project come to fruition knowing that I have helped in some small way to provide a smoother process to publication."

Dr Kuppuraj (Kuppu) is a Speech Language Pathologist from India who is taking forward this line of work in language learning. He has developed a computerized task which involves selecting a named picture that occurs in a sequence; some of the words occur in predictable sequences, but the person isn't told this. We want to see if they implicitly learn the sequences and so respond faster to the predictable items. He is currently developing this task with adults, and will test if short-term memory is related to performance. Once we have a good measure, we will use it with children to see if this is tapping into the type of problems that affect language learning in children with DLD. If so, then it could help us design language learning apps that could be used in intervention.

Kuppu is also interested in studying children learning languages where word order is less important. In languages such as Tamil, children may be less reliant on sequence-learning to succeed in mastering their native language.



Julie's daughter Yongling, with Kuppu and Dorothy, demonstrating her knowledge of English animal names!

This research is funded by a Newton Fellowship from the Academy of Medical Sciences.

If you are interested in taking part in Kuppu's studies, or want to find out more, e-mail:

Kuppuraj.sengottuvel@psy.ox.ac.uk

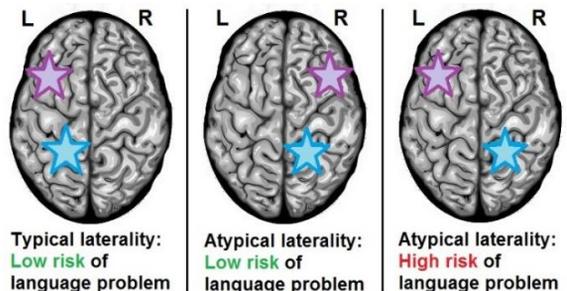
Solving the mystery of the asymmetric brain

Hands and brains have something in common. Our two hands look pretty similar, yet one is much more skilled than the other for tasks such as writing. Likewise, the two halves of the brain look much the same, but one side, usually the left, is specialized for language. We've known about this difference for over 100 years, but we still don't understand why humans are made this way. Is it more efficient to have all our language functions carried out in one half of the brain, rather than distributed on both sides? If so, we'd expect to find language problems in people who don't have the normal left-sided language organization.

In previous research by our group and others, we've found some evidence that people with language disorders are less likely to have the usual left-brained organization, but these studies were all rather small. It is only very recently that we've been able to measure language processing in the two halves of the brain directly, using an ultrasound technique that lets us look at blood flow as a person does a language task. Over the past five years, OSCCI researchers have travelled all around the country to visit over 200 twin children – some with language problems, others without. We collected data on a wide range of language skills and measured changes in blood flow in the two sides of the brain during a story-telling task.

Alex Wilson and Dorothy Bishop have just completed a preliminary analysis of results, and they don't find support for the idea that language disorders are linked to unusual language laterality. Overall, children tended to show left-sided activity during language, though some had right-sided activity, and others appeared to use both sides of the brain equally. But these unusual patterns of activity were not related to language skills.

In taking this research forward, we are now questioning whether people can just be divided up according to which side of the brain is important for language using a single task. There is some evidence that people may switch from being left-brained to right-brained, depending on the language task. So a person may show left-brain activity when asked to produce words beginning with a particular letter, but right-brained activity when deciding whether two words have a similar meaning. In our current research, we are investigating whether this is a solid finding, using our ultrasound technique to compare people's brain activity on a range of different language tasks.



We are interested in the possibility that the key thing for good language development may be having different language functions controlled by the same side of the brain – rather than whether any one function is left-brained or right-brained.

We are currently looking for adult participants aged 18-45 with a history of developmental language difficulties affecting language (e.g. Developmental Language Disorder, dyslexia, dyspraxia or autism spectrum disorder) to help with this study. The study involves two visits to the OSCCI lab, each lasting around 2 hours. To volunteer, or for more information, please email Abigail.bradshaw@psy.ox.ac.uk or visit:

<https://oxford.onlinesurveys.ac.uk/language-function-in-neurodevelopmental-disorders>

The impact of an extra sex chromosome on neurodevelopment

Most people have two sex chromosomes, an X and Y in males, and two Xs in females. But some people have a trisomy, i.e. an additional X or Y. The effects can be very mild, but there is an increased risk of language disorder. We completed a study of sex chromosome trisomies at the end of 2016. We have now processed all the DNA samples – thanks to all the families who provided saliva for us – as well as scoring and analysing results from the developmental tests with children. Our early results are already revealing some new insights. There is huge variability in the outcomes of children with an extra sex chromosome, with some children showing little or no evidence of any difficulty, and others having major problems affecting home and school life. The variation within each type of trisomy (XXX, XXY and XYY) is much greater than the variation between trisomies – i.e., you can't predict the nature or severity of problems just from the child's genetic diagnosis.

Hellos and Goodbyes!

This year we welcomed Alex Wilson as a new graduate student on our ERC-funded project, and said 'au revoir' rather than goodbye to two of our group members. Dr Nuala Simpson is currently on maternity leave, having had a lovely little girl, Neave in August. Dr Pauline Frizelle has returned to University College Cork to take up a lectureship, but her collaboration with OSCCI on children's comprehension is continuing. Dr Cathy Manning has been awarded a prestigious Sir Henry Wellcome Postdoctoral Research Fellowship this year. This involves her spending time in Stanford University in the USA and the University of Amsterdam, but we still see a lot of her as an OSCCI friend and colleague,

Rates of autism spectrum disorder (ASD) are higher than in the general population, but most children do not qualify for an ASD diagnosis. On the basis of previous research, we had expected to find high rates of social anxiety in children with an extra sex chromosome, but here too, although a few children have marked problems of this kind, most do not. The most commonly observed problem in all three trisomies are with speech production – although most children seem to grow out of early problems in speaking clearly, they still show difficulties on challenging tasks such as repeating tongue twisters. We expect to publish several papers documenting these results during 2018: these will be made available via our website.

If your family took part in this study, please do let us know if you have moved, You can update your contact details on our website (<https://www.psy.ox.ac.uk/forms/OSCCI-SCT-Study-Change-of-Address-form>), or by emailing us at oscci@psy.ox.ac.uk



The OSCCI Team

*Back: Zoe Woodhead, Alex Wilson, Abbie Bradshaw, Paul Thompson,
Front: Dorothy Bishop, Kuppuraj Sengottuvel*

Many thanks to the funders who have made our research possible, especially the Wellcome Trust and the European Research Council who support our work with major grants.

For further information: please consult our website for details of research and publications : <http://www.psy.ox.ac.uk/research/oxford-study-of-children-s-communication-impairments>