



Deaf research can improve clinical and educational outcomes for everyone

The Deafness Cognition and Language Research Centre was funded for an initial five years as part of the ESRC Research Centre programme in 2005, and began work in 2006. As this first period of funding comes to an end we look at what DCAL does, why it is important and what we hope to achieve in the next five years. DCAL's mission is to study questions about language – its origins, development and processes, using the communication of d/Deaf people as a model. Through its research and ancillary activities, the Centre aims to change perceptions of deafness and adjust hearing perspectives on deafness research. We pursue the integration of psychological, linguistic, developmental, cognitive and neuroscientific research in understanding d/Deaf language and cognition. This can only be achieved by placing the d/Deaf person at the centre of the enterprise and with respect for Deaf culture and identity so that our research contributes to the

improvement of the daily lives of d/Deaf people. DCAL provides a base from which the best deaf and hearing researchers in this field can produce major contributions to science, enabling training of the next generation of scientists working in this interdisciplinary field.

The landscape of deafness research has changed markedly in the five years since DCAL was launched

The landscape of deafness research has changed markedly in the five years since DCAL was launched. Its unique status as a model system for exploring questions in language and cognition, and in neuroscience, is now much more widely recognised (thanks in large part to DCAL's efforts). Clinical developments in relation to

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hearing intervention, especially cochlear implantation, are also changing the experience of deafness.

Our academic work will increasingly have a direct impact on stakeholders in education, health and social services and the third sector. Access to more information about the structure of BSL will lead to improved sign language teaching resources, such as textbooks and digitised video materials, that more accurately describe how the language is used within the British Deaf community.

Our research on deaf children's language and cognitive development has direct implications for education policy in relation to all deaf children, including those in bilingual (BSL and English) and monolingual (English) settings and both hearing aid and cochlear implant users.

DCAL's cognitive behavioural and neuroscience studies will support clinical work with deaf children and adults with neurological and communication impairments.

More appropriate resources for the bilingual education of deaf children, sign language teaching, and sign language interpreter training will in turn lead to improved quality of educational and interpreting services for d/Deaf people, providing more opportunities for self-development and employment.

Deaf people who can become more highly qualified and trained will be in a better position to provide contributions to society in a range of different ways, and will be able to achieve greater recognition, access, and equity in the wider community.

The last five years of DCAL research have shown the critical importance of including sign languages in

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theories of language learning, processing and cognition more generally. In the next five years, our research agenda will continue to provide unique insight into language, communication and cognition because the questions we address cannot be pursued in hearing populations. We expect that by the end of the next five years our research will provide critical findings that will further provide fundamental evidence to drive improved clinical and educational practices for d/Deaf individuals and the population at large.

DCAL Deaf Day – a huge success!

On 20 March DCAL hosted a vibrant deaf community event at University College London as part of the annual ESRC Festival of Science. Attended by around 120 people, the Deaf Day focused on sign language research, what it can tell us about how the brain works and whether there is such a thing as a "deaf brain".

The day was a chance for DCAL to present their latest research findings to the wider community and discuss future directions. Presentations included one on the Specific Language Impairment



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(SLI) Project and one on the BSL Corpus Project. This project involves video documentation of British Sign Language (BSL) grammar and vocabulary and the variations by gender, ethnic group, generation and regional dialect.

In addition to a packed day of lectures and presentations the event had a lively and creative range of activities which everyone could participate in. Attendees of the event included Deaf people who were just curious to find out more, BSL teachers and others who work in the Deaf community, and also interpreters and researchers. They enjoyed live interactive experiments, BSL film and poetry performances and the chance to network with colleagues and talk directly with DCAL researchers. The feedback from the day (which was held in BSL with English interpretation) was very enthusiastic; people learned a great deal whilst having fun.

One commented on the SLI lecture: "Everything was very useful. As a Deaf professional working with Deaf Mental Health knowing about SLI was an eye-opener and in some

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Robert Adam DCAL

cases, an explanation!" Another commented on BSL acquisition saying, "Before this I knew very little about BSL and Deaf issues. I myself am a native signer and was surprised that non-natives can pick it up more quickly. How interesting!"

DCAL's Robert Adam said how everyone was eager to take part,



crowding around the presentation tables and queuing up to have a go at the interactive experiments. These included a finger spelling accuracy task, deaf-blind tactile signing, reading lips upside down and a handshake activity. He said people enjoyed watching clips of Deaf people from around the UK from the Corpus videos.

The keynote speech, which was given by DCAL director Professor Bencie Woll, focused on the Deaf Brain and an overview of DCAL's

cutting-edge sign language research. Additional research projects were presented in poster format, including Autism in Deaf Children and the PALM project, which looks at the way different perspectives are signed in BSL.

Highlights of the evening entertainment were three films

written and directed by Deaf people: *The Association*, *Text Batteries and Ear Wax* and *The Guest*, and poetry recitals from Paul Scott and Richard Carter.

Reflecting on the day Adam said: "I think the presentations had a huge impact on Deaf people - seeing that we understand so much more about Deaf people, and above all, that we understand more about the human brain and cognition because of our work with the Deaf community."

He said that for DCAL the day, which was sponsored by ESRC and the Beacon Fund for Public Engagement at UCL, was a celebration of its work and that the centre would love to hold such an event again: "To see how interested and excited Deaf people were about our research made it really worthwhile!"

Every year the Festival of Science provides an opportunity to showcase the valuable work of the UK's social scientists and demonstrate how their work has an impact on all our lives.

BRIDGING THE GAP BETWEEN RESEARCH AND PRACTICE

On 4 February DCAL researchers met at the University of Leeds with 40 deaf and hearing practitioners, including Teachers of the Deaf and Speech Language Therapists. The occasion was an energetic public meeting which provided an opportunity for the two groups to get together to discuss their work and help bridge the gap between research and practice. The day highlighted shared concerns and new opportunities.

The event was organized by Dr. Mann, a DCAL associate based at City University London, in collaboration with Dr. Ruth Swanwick from the School of Education at the University of Leeds.

During the morning researchers Dr. Wolfgang Mann, Kathryn Mason, Kate Rowley and Anneka Starling were able to introduce DCAL's work and present findings from ongoing research projects on language development. These ranged from the development of a BSL-Vocabulary test (Mann), a study on Theory of Mind in deaf toddlers (Starling), to research on deaf children with Specific Language Impairment (Mason & Rowley).

During the afternoon the tables were turned and practitioners had an opportunity to share their experiences and thoughts about collaborating with researchers in a number of workshops. Focusing on areas including interaction between researchers and practitioners, research feedback and dissemination of findings, and needs for future research, this part of the event was particularly well received in that it helped both sides to remove some of the common misconceptions.

Some of the most commonly raised issues during the workshops included:

Interaction between researchers and practitioners

- Researchers often pressed for time due to funding-related deadlines which limits the extent of feedback they can provide (e.g. individual visits); difficulties to get research started, e.g. school consent, parent consent, may lead to time delays.
- Pressure on schools (as well as universities) to show results and justify funding which makes it even more

crucial to maximise the impact-level of research projects on end users, e.g. deaf children.

- Value of experience of practitioners often underused, yet not all practitioners are equally willing to commit themselves to projects that would encourage such close collaboration.

Feedback of information

- Need for better ways to publicise research to reach a wider audience as many schools would be interested in research participation but don't know where to find information
- Use of different outlets to feedback to practitioners, educator, and parents (e.g. DCAL website, BATOD website, NDCS website)

Areas for future research

- More research on deaf families to understand the keys to interaction.
- Deaf children with English as Additional Language (EAL).
- Development of reasoning skills in deaf children with varying language skills.

For more information on any ongoing developmental (or other) DCAL projects, go to <http://www.dcal.ucl.ac.uk/Research/associated2.html> or contact Wolfgang Mann at Wolfgang.Mann.1@city.ac.uk. We are particularly grateful to Ruth Swanwick and Ruth Kitchen from the University of Leeds for their help organising this event and would also like to thank all practitioners for attending.



Working together: a snapshot of collaboration at March 2010 conferences

DCAL director Professor Bencie Woll has been able to share DCAL's perspective and particular research directions with colleagues at a series of excellent conferences held this March that emphasise joint working.

On 4 March Professor Woll shared the keynote speaker role at a conference jointly organised by the UK Council on Deafness (UKCoD) and The Ear Foundation. The conference, *Action by Working Together*, focused on the new communications opportunities opening up with the technological advances in several types of hearing aid, cochlear implants and also with FM systems. These are systems that let teachers talk into a personal microphone that transmits directly to a child's hearing aid.

The conference looked at how the different technologies could benefit the users from a family perspective as well at school and in the workplace.

Professor Woll's presentation on Language and the Brain also discussed new technology – the use of functional brain imaging to understand how the brain processes language. Despite their surface differences, the brain essentially treats signed and spoken language as the same. Studies of both deaf and hearing people also show how information from many channels is integrated when language is processed.

Co-keynote speaker Professor Adrian Davis of the NHS Newborn Hearing Screening Programme (as well as Professor of Hearing Communication and Deafness at the University of

Manchester and Director of the Medical Research Council's Hearing and Communications Group) spoke on Changes in Hearing Technology. Other presentations included Chris Durst on hearing implants, an adult user's perspective on cochlear implants from Anna Herriman, and Tabitha Allum on STAGETEXT, a charity and company that delivers captioned performances and promotes the use of captioning in cultural venues throughout the UK.

“Sharing our research findings with professionals in the deafness field is a great opportunity to ensure mutual exchange of knowledge and experience” Professor Bencie Woll DCAL

The conference provided the chance for information sharing and lively discussion. Key issues that emerged were the pace of change in technology and the need for research to evaluate innovations.

A week later, on 13 March Professor Woll attended the British Association of Teachers of the Deaf (BATOD) conference as the keynote speaker. The conference, entitled *Communicating Clearly Together*, was held at St Celia's Church of England School in Wandsworth, London, and took the form of a Continuing Professional Development Day. It was arranged jointly between teachers of the deaf and speech and language therapists with around 250 delegates attending from all around the UK. Professor Woll's speech focused on DCAL's research

around deafness, language and the brain. Her emphasis for this event was how research can and should be used to underpin professional practice and approaches to intervention with deaf children.

The one-day conference included around 18 workshops and presentations, and the chance for delegates to discuss issues together. Amongst the workshop themes were: 'Profile of Actual Linguistic

Skills (PALS)'; 'Accelerated reading for secondary age deaf pupils'; 'Developmental frameworks – are we testing/assessing purposefully?'; 'Collaborative working between Speech & Language Therapists and ToDs (Teachers of the Deaf)'.

Reflecting on the conference Professor Woll said: "It is an important part of DCAL's mission to ensure knowledge transfer. Sharing our research findings with professionals in the deafness field is a great opportunity to ensure mutual exchange of knowledge and experience."

Professor Woll will be the keynote speaker at two further national conferences this year: the annual conference of the British Association of Paediatricians in Audiology on 11 June, and the British Association of Audiology conference on 10 November.

DCAL in partnership for unique dementia study

DCAL is part of a unique project to improve early diagnosis and management of dementia among Deaf people who use British Sign Language (BSL). The research, funded by the Alzheimer's Society, will examine how to identify dementia in Deaf people and explore how they might best cope with the condition. The study will also investigate how to provide support services for the Deaf community and will develop assessment tools in BSL. These BSL assessments will be developed by DCAL at University College London (UCL).

DCAL director, Professor Bencie Woll, said: "Early identification of dementia brings many potential benefits, including access to medications,

The DCAL team will work with colleagues at The University of Manchester, City University, London, and the Royal Association for Deaf people, bringing together Deaf and hearing researchers from a range of disciplines, including dementia care, social work, old-age psychiatry, psychology, Deaf studies and Sign Language research.

The researchers will study normal ageing amongst Deaf signing people with the help of several hundred Deaf people who come together annually for a holiday organised by the English Deaf Darby and Joan Club. The team will also work with Deaf people who have been diagnosed with dementia and their carers to explore their experiences of living with the illness,

what might be valued in care and support are based on hearing people's preferences, not rooted in an understanding of Deaf people's cultural experiences. Information about dementia and related services does not exist in Deaf people's preferred or only language – BSL. There are no validated assessment tools in British Sign Language for diagnosis of dementia among Deaf people and using assessments designed for English speakers with an interpreter can lead to misunderstandings; some terms do not mean the same thing to people from different cultures."

Dr Susanne Sorensen, Head of Research at Alzheimer's Society, said: "This exciting piece of research will, for the first time, look into the experiences of Deaf people with dementia. A person with dementia may have difficulty communicating and this can become a more complicated problem for Deaf people.

"The fact that many Deaf people struggle to get a diagnosis of dementia means that they're unable to access treatment"

Dr Susanne Sorensen *Head of Research at Alzheimer's Society*

more time for people with dementia and their families to make decisions about care and support, and the potential for a better quality of life.

"For Deaf people, the current lack of information in BSL and poor awareness in the Deaf community about dementia, combined with no diagnostic tools in BSL, means early identification is unlikely to happen. This research project aims to resolve that problem."

their priorities for care and how to improve early identification and support services.

Lead researcher Professor Alys Young, from the Social Research with Deaf People programme at The University of Manchester, said: "Nobody knows whether Deaf people are more or less likely to experience dementia than hearing people. Our assumptions about

"The fact that many Deaf people struggle to get a diagnosis of dementia means that they're unable to access treatment that could help relieve some of their symptoms and enable them to remain independent for longer. One million people will develop dementia in the next 10 years. We must act now."

A BSL video about the project is available on the University of Manchester website: <http://www.manchester.ac.uk/aboutus/news/display/?id=5516>

It's number 6, but not as we know it

The study of linguistics demonstrates that spoken languages are dynamic; they change through the generations and vary from region to region in the form of dialects. The BSL Corpus Project funded by the Economic and Social Research Fund and led by staff at DCAL underlines the fact that sign languages are no different.

A fascinating piece of research from the project's growing collection of video documentation reveals that Deaf British Sign Language (BSL) users sign numbers differently depending where they live in the UK and how old they are. The number sign study suggests a pattern where traditional regional signs are being lost from many parts of the UK. This pattern will be tested by studying changes in other areas of BSL vocabulary.

An example of regional variation is a Deaf person living in Bristol may sign the number SIX with their little finger, while someone living in London may sign SIX with their thumb. Signers living in the Manchester region may sign the numbers SIX to NINE with two hands (see below). This numbering system is thought to be unique to the Manchester region.

Examples of variation for the number sign six



Residential schools have played an important role in the different BSL signs. Deaf people use the number signs from their school long after they leave school. The closure of many Deaf Residential schools in the last

thirty years (with children now attending mainstream schools instead) could have an impact on the signs being used by younger people in the Deaf community.

The research suggests that older people tend to use "traditional" signs for numbers whereas younger signers use more "non-traditional" signs. It also shows that Deaf signers with Deaf parents use more traditional number signs than Deaf signers with hearing parents. The use of "non-traditional" signs by younger people appears to be highly dynamic. The traditional number sign variants used in Manchester for SIX, SEVEN and EIGHT tend to use two hands, but most young signers in Manchester use signs that are becoming more like the London signs (using one hand). This shift towards London signs is not the same across all regions. In Birmingham there is less use of the traditional flexing movement for numbers THIRTEEN to NINETEEN in younger signers. Instead they prefer to use a side-to-side movement for these signs.

The use of different signs for the same things is well known in the Deaf community, but the documentation and analysis of BSL within the 3-year Corpus Project is unique. The project looks at the links between variation and age, gender, ethnicity, region and family history. The research participants are 249 Deaf BSL users from eight UK regions. In addition to DCAL the team includes researchers from Bangor University, Heriot-Watt University and the University of Bristol.

To see photographs and read more on the number sign research findings, and find out about new studies on signs for countries, cities and colours go to: www.bslcorpusproject.org

"Motherese" or "teacherese" – language learning with deaf children from ethnic minority families.

DCAL Associate Dr Merle Mahon has been studying the education of deaf children from ethnic minority homes in the UK where English is an Additional Language (EAL). Her work may have important implications for the present practice of recommending that families of deaf EAL children communicate with

their children only in spoken English and British Sign Language (BSL).

Although the thinking behind current interventions is that English will best serve the children's future needs in education and working life, Dr Mahon's research identifies that those family members with less fluent

English struggle to communicate with their deaf children. Often it is the mothers who have limited English. Studying British-Bengali families, Dr Mahon suggests there could be benefits for the deaf child learning the home spoken language first and then to learn spoken English once they join their peers at school.

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In a related piece of research Dr Mahon looks at the possible benefits of second language teaching styles that mimic the way in which a deaf child may be taught a first or home language by their mother, or another family member. She labels this style as “motherese”. Such approaches may have considerable benefits for deaf children learning more than one spoken language.

In this research project Dr Mahon

analysed the interaction of a pre-lingually deaf child from a British-Somali family and his specialist teacher. She categorised the natural support as being more like “motherese” than the more controlling classroom style of “teacherese”. Analysis of the data showed the teacher treating the child’s turn at talking in a similar way to a mother and that these interactions appear more like first language acquisition than second language

learning. The teacher is faced with the task of addressing the EAL deaf child’s learning of spoken English in the classroom; however her approach is much more to deal with his deafness-related language difficulties and his acquisition of spoken language, than to teach English as a second language.

For a copy of this research paper please contact Dr Mahon directly at: merle.mahon@ucl.ac.uk

STUDYING DEAF CHILDREN’S VOCABULARY DEVELOPMENT IN BSL

A new DCAL-associated project, based at City University London, is studying deaf children’s (aged 4-15 years) development of vocabulary in BSL with the aid of an innovative on-line tool. The project should help address the considerable difficulties in assessing a Deaf child’s sign language vocabulary.

We know from spoken language that vocabulary is important because it is closely linked to later reading and writing skills and academic success in school. There are many different elements that are considered part of our vocabulary knowledge, e.g., what a word means, how it sounds, how it is written, which context it can be used in. This makes the task of measuring a person’s vocabulary quite challenging. For instance, if children fail to correctly produce a word in a vocabulary test, does this mean they do not know the word at all, or is it possible that they may know its meaning but not the form? Assessing a deaf child’s sign language vocabulary is even more difficult, given that many children come to language delayed which means that their vocabulary size varies a lot.

The research team, made up of deaf and hearing collaborators led by Dr. Wolfgang Mann, has developed a web-based BSL-Vocabulary Test (BSL-VT) which measures different levels of children’s knowledge of the meaning of a sign. By looking at each sign in more detail, one of the project’s aims is to overcome some of the basic limitations of many conventional vocabulary size tests, which provide limited information about a test taker’s vocabulary knowledge.

The BSL-VT has been designed in an accessible and colourful online format so it can be administered through the internet. Norms for the test are now established, based on a group of children with strong signing skills.

Get involved! DCAL is inviting deaf children (4-15 years) with different levels of signing to participate in the test phase of the project which runs from 1st May-30th June. The team would like to encourage as many pupils as possible to take part. Interested teachers and Speech & Language therapists should contact Dr Mann (Wolfgang.Mann.1@city.ac.uk). Read more at: http://www.dcal.ucl.ac.uk/Research/bsl_vocabulary_test.html

The Family Sign Language website: a fun new BSL website for families of deaf children

After several phases of development over the last few years, joint research with DCAL staff and successful efforts to attain government funds to support sign language learning for families, the NDCS (The National Deaf

Children’s Society) has announced the development of a new and exciting website for families of deaf children.

The Family Sign Language website is a fun and interactive website for families of deaf children aged 0-5

who want to learn basic British Sign Language (BSL). The website, which features scenes from a sea-side town, includes a dictionary of over 300 everyday signs and phrases, activities and games to use at home, storytelling and communication

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tips and lots of other exciting resources for learning BSL as a family. It is available at <http://www.familysignlanguage.org.uk/>

For DCAL the website project has a long and interesting history, starting out in 2003 when the NDCS approached DCAL, amongst others, regarding the content of a paper-based sign language curriculum for families. That first phase of work produced a resource which was distributed to teachers of sign language in 2006 and 2007. A year or two later NDCS approached DCAL for support with a resource to reach families through a website. The result was a wider project called I-sign whose main aim is to improve the signing skills of families with deaf children, and which involved a consortium of voluntary sector organisations, universities and the government's Department for Children, Schools and Families. DCAL was able to provide I-sign with data from their research to inform the vocabulary lists and teaching materials for the website, as well as archive material showing preschool deaf children communicating with their deaf families. These helped create a list of typical sentence types. Other DCAL input was to provide information to parents about social and emotional language as at that

time DCAL showed that there were striking differences between the conversations of hearing mothers produced with their deaf babies, to conversations between deaf mothers and their deaf babies.

The Family Sign Language website, also accessible via a link on the I-sign site (www.i-sign.org.uk) is a new family-friendly product arising from these years of collaboration.

The next stage in the project is teaching the teachers who will deliver the materials to parents this year. Several DCAL staff, including Dr Gary Morgan and Dr Robert Adam, will be involved in this. Dr Morgan has also set up an assessment study to see if the curriculum actually makes a difference for deaf children's language.

DCAL and NDCS hope families enjoy exploring the new website and would be pleased to have any feedback or comments. Please contact the Family Sign Language site project manager Kathryn Halsey at sign@ndcs.org.uk with your input.

A summary DVD version will also be available in the coming weeks for families who do not have access to the internet.



Mini-lecture: The truth about sign language

In early January DCAL Senior Research Fellow Dr Adam Schembri posted a mini lecture on the web-based shared video site, YouTube. The posting is part of University College London's UCLTV project which allows the university to post videos of some of its work on the popular global website. Dr Schembri's lecture *The truth about sign language* explains in a straightforward and succinct way that sign languages are different across the world, for example that Australian Sign Language is closely related to British Sign Language (BSL), but that American Sign Language is quite different.

People outside the deaf community may not know that the regional variations found in spoken language also exist in sign language. Dr Schembri goes on to say that this variation is the subject of the BSL Corpus Project, led by the team at DCAL and of which he is Project Director. In the video he explains what this research is telling us about the history of a language that, like every other, is continually changing.

The BSL Corpus Project has important applications for deaf people and those working with them. For example, documenting BSL can help create better dictionaries and sign language teaching resources.

To watch the video go to <http://www.youtube.com> and type in *The truth about sign language*. For more information about the project go to www.bsllcorpusproject.org

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