Institution: University College London
Unit of Assessment: 4 Psychology, Psychiatry and Neuroscience
Title of case study: Raising awareness of developmental language disorders to improve policy and practice
Period when the underpinning research was undertaken: 2016 – present
Details of staff conducting the underpinning research from the submitting unit:

Name(s):	**Role(s) (e.g. job title):**	**Period(s) employed by submitting HEI:**
Courtenay Norbury	Professor	January 2016- present

Period when the claimed impact occurred: 2016 – present
Is this case study continued from a case study submitted in 2014? N

1. Summary of the impact

Research conducted at UCL has created the first evidence-based picture of the prevalence, persistence, and impact of Developmental Language Disorder (DLD). Data from the research underpins a global campaign to transform the way DLD is understood and discussed. The research findings were taken up by the Royal College of Speech and Language Therapists and other communications and mental health charities and practitioner organisations worldwide, informing their advice to practitioners and providing them with a concrete evidence base to drive their campaigns for national policy change. In the UK, these campaigns culminated in revised government guidance to service commissioners around identifying and supporting people with DLD.

2. Underpinning research

Developmental language disorder (DLD) is a persistent neurodevelopmental condition associated with academic underachievement, increased risk of poor mental health, and long-term unemployment. However, diagnosis of DLD has been hampered for a long time by inconsistent and misleading terminology and by an incorrect assumption that language impairment that was "specific" to language was fundamentally different to language impairments that occurred in the context of broader cognitive challenges. This assumption led to the systematic use of low non-verbal IQ scores to exclude children from receiving specialist language support.

The Surrey Communication and Language in Education Study (SCALES) is a longitudinal population study of language development and disorder from school entry to secondary transition, funded by Wellcome and ESRC. The study was conducted in two phases, both led by Professor Norbury. The first phase (screening of 7267 children and in-depth assessment of a sub-sample of 600 children) began in 2011 at Royal Holloway and moved to UCL in 2016 where it was continued, completed and published. The second phase, a longitudinal follow-up study beginning in 2018, was conducted entirely at UCL.

Prevalence and persistence of DLD
Prof Norbury's population study was the first in the UK to document the number of children starting mainstream school with a clinically and educationally significant language disorder. The research estimated that 7.58% of children had DLD and a further 2.34% had a language disorder associated with another biomedical condition [**R1**]. The longitudinal study highlighted strong stability in child language throughout primary school, with a 2 to 3-year language gap between those with DLD and their peers persisting to the end of Year 6 [**R2**]. The findings show that identification of DLD in the first year of school is reliable and unlikely to spontaneously resolve.

Diagnostic criteria for DLD
SCALES data provide key evidence of the non-validity of accepted discrepancy criteria, in which non--verbal IQ must be within normal limits and significantly greater than language skills to warrant diagnosis [**R1**]. Instead, SCALES demonstrated minimal differences between children with discrepancies and those for whom non-verbal IQ fell between -2 and -1SD with regard to severity

of language deficit, educational attainment or broader behaviour deficits. Non-verbal IQ was therefore found not to be valid as a diagnostic criterion for DLD. The longitudinal study also showed that it was not a significant predictor of change in language competence over the first three years of school [**R2**].

Functional impacts of DLD
SCALES measured social, emotional and behavioural profiles associated with DLD, showing a clear link to increased rates of clinical symptoms in all domains [**R1**]. The project was unique in incorporating standard measures of academic attainment as indicators of functional impact. Findings demonstrated that only 11% of children who meet criteria for DLD meet early curriculum targets [**R3**]. In addition, this is the only study to include data from children learning English as an additional language. The research showed that English language performance at school entry is highly predictive of school attainment data three years later in both monolingual and bilingual children [**R4**]. The research further demonstrated that children with DLD are more likely to be judged as having significant symptoms of attention deficit, but that teachers are significantly more likely to rate children as having inappropriate attention (21% of children with DLD) than parents are (3% of children with DLD). The research demonstrated robustly that early language skills predict (even in Y6) a child's ability to recognise emotional cues from both voices and faces and have a clear impact on emotion regulation [**R5**].

The CATALISE consortium was established in 2015 to address the lack of consistency in terminology. Through two Delphi exercises, Professor Norbury contributed SCALES evidence concerning diagnostic criteria, specifically the impact of removing non-verbal IQ criteria from the diagnosis on clinical profile, educational impact, and prevalence of DLD. These data are cited in the 2016 CATALISE paper [**R6**].

3. References to the research

[R1] Norbury, C. F., Gooch, D., Wray, C., Baird, G., Charman, T., Simonoff, E., Vamvakas, G., &Pickles, A. (2016). The impact of nonverbal ability on prevalence and clinical presentation of language disorder: evidence from a population study. *Journal of Child Psychology and Psychiatry*, *57(11)*, 1247-1257. doi.org/10.1111/jcpp.12573.

[R2] Norbury, C. F., Gooch, D., Vamvakas, G., Baird, G., Charman, T., Simonoff, E., & Pickles, A. (2017). Language growth in children with heterogeneous language disorders: a population study. Journal of Child Psychology and Psychiatry, 58(10), 1092-1105. doi: 10.1111/jcpp.12793.

[R3] Norbury, C. F., Gooch, D., Baird, G., Charman, T., Simonoff, E., & Pickles, A. (2016). Younger children experience lower levels of language competence and academic progress in the first year of school: evidence from a population study. *Journal of Child Psychology and Psychiatry*, *57(1)*, 65–73. doi.org/10.1111/jcpp.12431.

[R4] Whiteside, K. E., Gooch, D., & Norbury, C. F. (2017). English language proficiency and early school attainment among children learning English as an additional language. *Child Development*, *88(3)*, 812–827. doi: 10.1111/cdev.12615 .

[R5] Griffiths, S., Goh, S. K. Y., Norbury, C. F., & the SCALES team (2020). Early language competence, but not general cognitive ability, predicts children's recognition of emotion from facial and vocal cues. *PeerJ, 8:e9118*. doi: 10.7717/peerj.9118

[R6] Bishop, D. V. M., Snowling, M. J., Thompson, P. A., Greenhalgh, T., The CATALISE Consortium (inc. Norbury, C. F.). (2016). CATALISE: A multinational and multidisciplinary Delphi consensus study. Identifying language impairments in children. *PLoS ONE, 11(7)*. doi: 10.1371/journal.pone.0158753.

4. Details of the impact

Driving a global campaign to raise awareness of DLD
The CATALISE consensus paper [**R6**] used the evidence from SCALES to establish a new, consistent terminology around DLD, including the use of the term Developmental Language Disorder itself to replace 'Specific Language Impairment'. As a result, the campaign RALLI (Raising Awareness of Language Learning Impairment) changed its name to RADLD and used the publication of the CATALISE paper to launch the first International DLD Day in 2017 to

publicise the new terminology, spread key findings and reach out to the worldwide community of teachers, speech and language therapists (SLTs), parents and children. Now in its 4th year, DLD Day has 759 ambassadors representing 48 countries, with resources translated into 28 languages **[S1]**. Subscribers to RADLD's YouTube channel more than doubled from approx. 2.5k to 5.4k after the first DLD Day, and now number over 13.5k in 130 countries. A short information video made to accompany the first DLD Day has been viewed over 82,000 times **[S2]** and contains one of the key messages on prevalence ('2 children in every classroom') drawn directly from SCALES research and widely adopted, and quoted in the UK Parliament **[S3]**. The 2020 DLD Day Twitter hashtag #DLDseeme was used by 2,647 contributors in a total of 10,376 tweets with a potential reach of almost 5 million people **[S4]**. The DLD day campaign has over 9k followers on Facebook and its most popular post of 2020 reached an estimated 53,244 people **[S1].**

The research has been widely reported in mainstream media including the Times, the Guardian, the Evening Standard, Good Morning Britain and the ITV Evening News. The Times Education Supplement (TES) featured the SCALES findings on their front cover in Feb 2018 and recorded a TES podcast by Norbury (June 2018) that has been downloaded more than 3000 times.

Informing practice in speech and language therapy, mental health and education
Concerted dissemination activity brought the research to the attention of practitioners in speech and language therapy, mental health and education. Professional organisations and charities incorporated its findings into guidance to their members.

The Royal College of Speech and Language Therapists (RCSLT) represents over 17,000 SLTs in the UK, and some 2.5 million people in the UK with communication support needs. They explain the importance of the SCALES data: "*Awareness and understanding of language disorder is limited. This is particularly the case amongst other professionals, policy makers, and the general public, but is also the case within SLT. The SCALES study provides the robust, population-level data we need to address this*" **[S3]**. This importance is reflected in their choice of Professor Norbury to deliver the keynote lecture at their national conference in 2017. RCSLT have since used the SCALES findings: in a briefing document for SLTs to contextualise the size of the issue and build the argument for the SLT's crucial role in supporting children with DLD; a webinar for members to define the prevalence of developmental language disorder and discuss the changes required to SLT services to effectively support people with DLD; a system leaders event (with Norbury as introductory speaker) to develop awareness of DLD amongst other key professions (e.g. educational psychology) and policy makers; and to guide their own research priorities **[S3]**.

The Association for Child and Adolescent Mental Health (ACAMH) invited Norbury to write a Clinical Topics Guide on DLD for their website to support clinical psychologists in identifying DLD and understanding the role of language in social, emotional and behavioural problems. The guideline has received more unique visits (22,644) spending more time on average (5.33 minutes) than any other Topic Guide on the website. **[S5]**

I CAN (the national charity for children and young people's speech, language and communication) state that SCALES has been "*instrumental in informing and steering our work and strategy. Data from SCALES is embedded in I CAN's key facts and statistics document, a guidance document which is regularly updated, and which is used across our messaging and influencing. In particular, the prevalence data for Developmental Language Disorder have really shaped the way we communicate the issue of children's communication*"**[S6]**. The charity (whose website is accessed by over 1,200,000 people annually) uses the data regularly to illustrate how many children that need specialist services are not receiving them. The SCALES data formed an important element in training they provided to staff in the Department for Education around the implications of DLD on children and young people's life chances. The research led them to remove non-verbal IQ as the defining criterion for entry into their two specialist schools **[S6]**.

Evidencing the Speech and Language policy debate
The findings have informed key reports that advocate a change in approach to young people with speech, language and communication needs. In November 2016, Norbury presented the SCALES

research to the All Party-Parliamentary Group on Speech and Language Difficulties, helping to galvanise the support of MPs and peers. The study findings **[R1]** were used in a 2017 report **[S7]** by the Communication Trust (a consortium of over 50 child communication charities) to evidence the under-identification of language delay and its serious implications for later life chances; **[R1]** featured prominently in the 2018 joint RCSLT/I CAN report *Bercow: ten years on* **[S8]** making the case for improved support for children. The same research was quoted by MPs in a parliamentary debate following on from the report's publication **[S3];** and in a 2019 joint paper **[S9]** by the Literacy Trust and the All-Party Parliamentary Group on Literacy it was used to evidence the link between development of oral language and reading and writing skills to support calls for initiatives to support early years oral communication.

In October 2020, Public Health England and the Department for Education published guidance for all local commissioners and service leads in health and education in England and Wales, *Best start in speech, language and communication*. The document cites research from the UCL team and lays out a model pathway to meet the speech, language and communication needs of children in the early years **[S10].** Norbury was on the Expert Advisory Group for the guidance, which cites both her research and *Bercow: 10 years on* **[S8]** as evidence of the prevalence of DLD and its serious implications for children's attainment, and thus the pressing need for multi-agency support.

5. Sources to corroborate the impact

[S1] *Post-campaign report on DLD Day 2020*. RADLD. 2020.
[S2] DLD 1-2-3 on YouTube showing number of views (Accessed 17/03/2020) https://www.youtube.com/watch?v=tQ-s02HWLb0&vl=en-GB
[S3] Joint letter from CEO and Chair of Royal College of Speech and Language Therapists
[S4] Twitter analytics of #DLDseeme hashtag between 09/10/2020 and 23/10/2020.
[S5] Association for Child and Adolescent Mental Health (ACAMH) website page view figures from launch to Dec 2020 for ACAMH topic guidelines, supplied by ACAMH.
[S6] Letter from Director of Operations, I CAN.
[S7] *Talking about a generation: a review into current policy, evidence and practice for speech, language and communication*. ICAN. 2017.
[S8] *Bercow: ten years on*. ICAN. 2018.
[S9] *Language unlocks reading*. Literacy Trust and APPG on Literacy. 2019. https://cdn.literacytrust.org.uk/media/documents/Language_unlocks_reading.pdf
[S10] *Best start in speech, language and communication: Guidance to support local commissioners and service leads.* Public Health England. 2020. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/931310/BSSLC_Guidance.pdf