

Institution: University of Sheffield
Unit of Assessment: 28B - Modern Languages and Linguistics: Linguistics
Title of case study: Children's speech and literacy difficulties: influencing professional practice
<p>1. Summary of the impact</p> <p>The psycholinguistic framework for research and practice developed by Stackhouse and Wells is now a key component of the majority of UK speech and language therapy courses at undergraduate and postgraduate levels. In addition to influencing the design and delivery of course curricula in the UK, Europe, Australia, South Africa and USA, the framework is used in continuing professional development for speech and language therapists (SLTs), special needs teachers, and with parents. The resultant impact on clinical and educational practice, the assessment of children and the planning of therapy interventions can be seen across the spectrum of persisting speech difficulties, including those related to dyspraxia, dysarthria, dyslexia, cleft palate, Down Syndrome, stammering, specific speech and language impairments.</p>
<p>2. Underpinning research</p> <p>Although speech problems can have an obvious cause such as a cleft palate, there is no such 'medical' origin for the majority of persisting speech difficulties (PSDs) in children in mainstream schools. For this reason, Stackhouse and Wells have proposed that successful intervention for children with PSDs depends on describing speech difficulties in phonetic and linguistic terms, then investigating underlying psycholinguistic processing difficulties. These may include problems with speech input (e.g. hearing the difference between similar sounding words like 'key' and 'tea'); with storage of pronunciation information about words in the child's mental dictionary; or with programming the articulators that produce speech output such as the tongue, lips and soft palate. Professor Bill Wells, a clinical linguist, and Professor Joy Stackhouse, who is dually qualified as a speech and language therapist and developmental psychologist, along with colleagues and students at UCL (1993-2000) and then Sheffield (2000-present), have developed a psycholinguistic framework which enables weaknesses in these underlying processing skills to be identified and then addressed in therapy. Integral to the framework is an assessment of literacy skills, since children with PSDs are at risk for problems with reading and in particular with spelling. The psycholinguistic framework was used in a NHS-funded longitudinal study of children with primary speech difficulties from the age of 3 (1997-2002, PI: Stackhouse). Since arriving in Sheffield in 2000, Stackhouse and her team have shown that those children whose speech processing difficulties are pervasive at age 3 or 4 years are particularly at risk for speech and literacy problems that persist into the school years [R1]. These children perform less well than IQ matched peers on national school attainment tests (SATs), in particular on spelling [R2]. In Sheffield, the first important research effort has been to disseminate in book /CD form the project results and the tests developed for that research, so that they are readily accessible for clinical use by SLTs and by students in training [R3]. The second goal has been to extend this approach to psycholinguistic test development in other languages, e.g. German [R4], Greek, Mandarin and Arabic. A third key development at Sheffield has been to devise and implement individualised therapy interventions that are based on the psycholinguistic framework, as reported in [R5] and [R6] for example. As well as demonstrating the effectiveness of the psycholinguistic approach, these published case studies provide a model for SLT practitioners and students when planning their own therapy.</p>
<p>3. References to the research</p> <p>R1. Nathan, L., Stackhouse, J., Goulandris, N. and Snowling, M. J. (2004). The development of early literacy skills among children with speech difficulties: A test of the critical age hypothesis. <i>Journal of Speech Language and Hearing Research</i>, 47, 377-391</p> <p>R2. Nathan, L., Stackhouse, J., Goulandris, N., & Snowling, M. J. (2004). Educational consequences of developmental speech disorder: Key Stage 1 National Curriculum assessment results in English and mathematics. <i>British Journal of Educational Psychology</i>, 74(2), 173-186.</p>

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- R3. Stackhouse, J., Vance, M., Pascoe, M., Wells, B. (2007). *Compendium of Auditory and Speech Tasks: Children's Speech and Literacy Difficulties 4*. Chichester: Wiley (461 pp; +e book)
- R4. Schaefer, B., Fricke, S., Szczerbinski, M., Fox-Boyer, A. Stackhouse J., Wells B. (2009) Development of a test battery for assessing phonological awareness in German-speaking children. *Clinical Linguistics and Phonetics*.23,6. 404-430.
- R5. Pascoe, M., Stackhouse, J., & Wells, B. (2005). Phonological Therapy within a Psycholinguistic Framework: Promoting Change in a Child with Persisting Speech Difficulties. *International Journal of Language and Communication Disorders*,40, 189-220.
- R6. Pascoe, M. Stackhouse, J. and Wells, B (2006) *Persisting Speech Difficulties in Children*. Children's Speech and Literacy Difficulties 3. Chichester: Wiley. (441 pages)

Note: R1 R2 R4 R5 are published in peer review journals; all are at least 2* quality. R1 & R2: data was collected while Stackhouse was at UCL; analysis and writing took place after her move to Sheffield in 2000. R3 R5 R6: all authors at Sheffield when research carried out and published. R4: all authors except Fox-Boyer at Sheffield when research carried out and published.

4. Details of the impact

The psycholinguistic framework benefits children with speech, language and communication needs, by improving outcomes of speech intelligibility and literacy acquisition. This is achieved through the impact of the framework on the practices and policies of the key individuals and groups who work with and for these children. There is thus a spectrum of vertical impact: through university courses, via SLT/ education practitioners and policy makers to the individual children who have these difficulties. The horizontal reach of the impact is considerable, as the framework has been adopted internationally. The significance of the framework is that it has changed teaching methods in SLT higher education, SLT policy and the way children's speech difficulties are approached. While the basic assessment framework was developed and disseminated prior to 2000, subsequent research on the design and implementation of therapy interventions since Stackhouse and Wells moved to Sheffield in 2000 has impacted on the training of SLTs and on the practice of therapists during the REF census period.

The impact has been achieved through a sustained process of engagement by the researchers with professional practitioners, including SLTs and teachers as well as university lecturers. This has taken the form of continuing education courses, delivered inside and outside the university; articles in journals read by practitioners; presentations at practitioner conferences; and contributions to the policy development of the professional bodies and charities that can influence practice with children who have speech and literacy difficulties. Underpinning these activities are the books by Stackhouse, Wells and collaborators, which are presented in a way that is accessible to students and practitioners alike. Cumulative sales of the four books in the series from 1/1/2008 to 30/7/13 are 2,449, and books 1 and 4 are available as e-books. The sales of Books 1-3 prior to 2008, 11,244 in total, help to account for the subsequent impact of the framework [S1].

Impact on speech and language therapy educators

The main pathway to impact on speech and language professionals is through training and education. The framework has been adopted on virtually all undergraduate and postgraduate speech and language therapy (SLT) courses in the UK, influencing the design and delivery of the curriculum. There is strong evidence from UK SLT lecturers that they have integrated the framework into their own teaching practice. In a questionnaire survey of all UK SLT qualification degree programmes (excluding University of Sheffield) conducted March-July 2013, responses were received from all 22 programmes. In 2008-2013, c.3,900 SLT students, on 21 of these 22 programmes, received lecture teaching on the psycholinguistic framework. Of these, c.2,500 SLT students, on 14 of the programmes, were required by their lecturers to engage more deeply with the framework, for instance in workshops, in clinical practice or in project assignments. The large majority of these students have gone on or will go on to work in SLT or closely related fields. The

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following comments made by lecturers from different universities when responding to the survey, indicate the pedagogical value of the framework [S2]:

"We have found that using the psycholinguistic framework in teaching is a really valuable way to get students thinking in much more detail and more critically about children's speech impairments."

"It really helps focus the students to make hypothesis driven differential diagnoses for children with developmental phonological difficulties. It also highlights issues of assessment / task demands."

"We introduce it in level 4 as a basic model and then in detail in level 5 and we expect application of thinking in all of the clinical placement modules where relevant."

"We have had some excellent Year 3 projects which have looked at some aspect of management for speech and/or literacy difficulties using the psycholinguistic framework. In at least one case, the project was instrumental in securing the student's first job!"

"Not sure how I would teach without it, or how clinicians manage without it!"

Impact on speech and language therapy services

The wider impact of the psycholinguistic framework on clinical services is evidenced by the fact that SLT's have integrated the approach into their own working practices, including assessment procedures and intervention programmes.

In a recent survey of the Southern RCSLT Special Interest Group (SIG) on Speech Difficulties, 22 SLTs responded (18 from the NHS, 4 in independent practice). Twenty-one use the framework in their practice from preschool to secondary age children, each averaging around 25 children per year. All use it when assessing a child's difficulties; 80% use it when carrying out intervention, and over half also for training purposes. 60% ranked the PLF as 'very' or 'extremely' useful. According to one respondent, *"Stackhouse and Wells have provided speech therapists with an excellent clinical framework to collect data, analyse data and draw inferences in order to think of treatment plans for children with speech disorders"*. Another specialist commented: *"It's a large part of the way I work"*.

Moving from the individual practitioner to the organisational context, the Cambridgeshire NHS SLT service is an example of how a local SLT service has integrated the framework into its assessment and intervention process: *"The approach has become embedded in how we talk about children's speech"* [S3]. The potential for impact is still greater when therapists publish a programme that draws on the framework. An example is the Nuffield Dyspraxia Programme (NDP), authored by senior SLTs at the Nuffield Hearing and Speech Centre at University College London Hospitals, which is the NHS's national specialist centre for developmental verbal dyspraxia. When the programme was revised in 2004, it was rewritten to incorporate the Stackhouse & Wells framework as its theoretical basis. The NDP has been in wide use in UK SLT services and also overseas during the census period, with 3000 copies sold since 2008 [S4].

The impact of the psycholinguistic framework among qualified practitioners has been promoted through extensive Continuing Professional Development (CPD) activities led by the Sheffield research group. Approximately 300 qualified SLTs have undertaken postgraduate certificate, diploma or MSc study at Sheffield during the census period; all have received some training in the psycholinguistic framework and some have conducted research studies using it. In addition, since 2008 Stackhouse has been regularly invited to present updates on the framework to SLT practitioners at in-service training days or to Special Interest Groups in speech, language, and cleft palate e.g. in Leicester, London, Nottingham, Hertfordshire; as well as keynote presentations to multidisciplinary audiences, e.g. *Dyslexia and Co-occurring Issues* conference run by the British Dyslexia Association, London (2011).

Impact on professional bodies and charities as policy forming agencies

The impact of the framework in shaping policy for children with speech difficulties is evident from citations in policy documents, position papers and information booklets produced by bodies that serve as agents of change at national level. These include the Royal College of Speech and Language Therapists (RCSLT), which publishes policy statements on clinical conditions, as advice

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for members of the profession. The framework is cited extensively in its Policy Statement on Developmental Verbal Dyspraxia (2011) [S5], drawing attention to the importance of assessing speech input skills in children whose difficulties hitherto had been considered to be purely with speech output (articulation). ICAN, the children's communication charity, publishes the *ICAN talk* series for speech and language practitioners. Issue 1 (reprinted 2009) *Speech, Language and Communication Needs and Literacy Difficulties*, cites the framework extensively [S6]. The framework has changed the information clinicians in the NHS and independent practice collect as a basis for a child's intervention programme and has demonstrated how the development of literacy skills can be assessed and integrated into speech and language therapy procedures.

Impact beyond the UK

The framework is taught on SLT training courses in Europe, Australia, South Africa, and USA as well as in continuing professional development (CPD) for SLTs, special needs teachers, and with parents. It has been adopted beyond the UK as the result of a range of activities and processes. Examples of invitations to Stackhouse to deliver talks and CPD courses on the framework include: Swedish SLT association: Stockholm, 2011; Danish SLT CPD Programme: Copenhagen, 2012; Germany ISESVII: Leipzig 2012. In addition, S Fricke has run courses on the framework for Swiss-German, German and Austrian SLT CPD Programmes 2008-12, as has M Vance in Greece (2008) and Ireland (2011). SLT PhD students from Germany, South Africa, Malaysia and Taiwan have been supervised by Stackhouse, Wells and colleagues at Sheffield on topics related to the framework, including a joint supervision with a German university. On average four non-UK SLT MSc students each year have undertaken research using the framework, adapting it to their local language and SLT context (Germany, Greece, Hong Kong, Jordan, Malaysia, Saudi Arabia).

Publications deriving from or extensively citing the framework have appeared in other languages. The first comprehensive test battery of phonological awareness to be devised for the German language is based on the framework: Fricke, S., & Schäfer, B. (2008) *Test für Phonologische Bewusstheitsfähigkeiten* Idstein: Schulz-Kirchner. 2nd ed 2011. There is extensive citation of the framework in the leading textbook on children's speech difficulties for German-language SLTs: Fox, A: *Kindliche Aussprachestörungen.: Phonologischer Erwerb - Differenzialdiagnostik - Therapie* (2nded 2005, reprint 2011) [S6]. The framework is highlighted by a chapter in a major US textbook: Stackhouse, J. and Pascoe, M. (2010) 'A psycholinguistic framework for working with children with speech sound disorders' in Williams, L., McLeod, S. and McCauley, R. *Treatment of Speech Sound Disorders in Children* (Brookes Publishing). Based in Australia, Caroline Bowen's website, which is used internationally by SLTs working with speech difficulties, features the psycholinguistic framework prominently [S7], as does the USA-based Apraxia Kids website [S8]. Both sites are also used by parents of children with speech and literacy difficulties.

5. Sources to corroborate the impact

- S1. The Editorial contact at Wiley-Blackwell Publishers can verify the number of books sold.
- S2. A Speech and Language Therapy lecturer can corroborate impact on UK SLT education.
- S3. The Lead Practitioner of the Cambridge Speech and Language Therapy service can corroborate the impact of the PF on an SLT service (<http://tinyurl.com/b6cjoxl>).
- S4. The Consultant Speech and Language Therapist/Team Manager at the Nuffield Speech and Hearing Centre can corroborate the impact of the PLF on a therapy programme.
- S5. <http://www.ndp3.org/documents/rcslt2011dvdPolicyStatement.pdf> pp21,40
- S6. A professor at the European University of Applied Sciences Rostock, Germany, can corroborate international impact.
- S7. Caroline Bowen website (Australia) corroborates international reach to SLTs: (<http://tinyurl.com/ppvtuxo>).
- S8. Apraxia kids website (US A) corroborates international reach to families (<http://tinyurl.com/nfryhtk>).